

SATURDAY, SEPTEMBER 5, 1874.

No. 122, New Series.

THE EDITOR cannot undertake to return, or to correspond with the writers of, rejected manuscript.

LITERATURE.

LORENZO DE' MEDICI.

Lorenzo de' Medici il Magnifico. Von Alfred von Reumont. Zwei Bände. (Leipzig: Duncker und Humblot, 1874.)

It is now nearly eighty years since Roscoe's *Life of Lorenzo de' Medici* first aroused in Italy, as well as in England, popular interest in the history of Florence and of the Renaissance literature. The warm enthusiasm and poetic feeling of the Liverpool merchant commanded attention for his subject, and established its importance. But much additional material has been obtained since Roscoe wrote, and Herr von Reumont is amply justified in undertaking the task anew.

Roscoe had a keen literary sympathy with Lorenzo and the polished circle that surrounded him, but he failed in understanding the purely Italian side of his subject. He did not see the general bearings of Italian history during that age; he had only slight knowledge of the constitution of Florence, and the influences under which Florentine politics had been moulded; above all, he had no feeling for the city of Florence itself, for its buildings, its art, its culture, its manner of life.

It is almost needless to say that all these defects are supplied by Herr von Reumont. His previous works have already justly gained for him the reputation of having contributed more than anyone out of Italy to a knowledge of Italian history. In the present work he begins by a clear sketch of the growth of Florence and of its government. He traces the beginning of the connexion between the Medici family and the Florentine democracy. He sets accurately before his readers the political conditions of Florence, both in its internal and external relations. Moreover, he thoroughly appreciates the fact that the greatest record an Italian city possesses is itself; its buildings and its streets, if rightly interpreted, tell all that is most important of its past. With Florence as a city, Herr von Reumont is entirely familiar: and this familiarity is the great charm of his book. He knows its streets and palaces as they were in Lorenzo's days: he knows the men who were then moving in its courts. Though his book consists of 1,200 octavo pages, almost unencumbered by notes, still he is conscious of having laboured at condensation: nor does the detail upon any point exceed the due proportion of the rest. The book is full, without being trivial: there is not a line that is written merely for the sake of effect; everything has a distinct bearing on the knowledge of Italy at the time.

Still, with all these merits on Herr von Reumont's part, we must confess to a doubt, whether, if his book had been first in the field, it would have awakened the same in-

terest in its subject as Roscoe succeeded in doing. Both writers are thoroughly engrossed in their work, both are real enthusiasts, both are genuine admirers of their hero. Herr von Reumont sees more clearly his many-sidedness, and appreciates more fully the difficulties he had to contend with. But Roscoe's finer literary feeling makes him more keenly sympathetic with the intellectual greatness of the time. The Liverpool merchant had a personal fellow-feeling with Lorenzo de' Medici which the German student could never have. The connexion of commerce, politics, and literary culture in daily life, was a real problem which he rejoiced in studying for his own good and for that of those around him. So his book has a genuine personal interest. The poems of Angelo Poliziano were to him a source of real enjoyment. The thought of the Medici Gardens, with Lorenzo and his learned circle engaged in friendly discussion was an embodiment of his own highest aspirations. To Herr von Reumont these are objects of study rather than of feeling, of investigation rather than of sympathy.

Hence we may say that of the two requisites for the treatment of the Renaissance—those of an historian and those of a literary critic—Roscoe is better as a critic, though Herr von Reumont is immeasurably superior as an historian. It is in fact as a political and literary history of the times that his book ought to be judged. It is admirable for accuracy and thoroughness, rather than for picturesqueness and interest. The only strong feeling running through the book is the feeling for Florence as a city.

Working purely as an historian, the method which Herr von Reumont adopts is analytic and not synthetic. He takes up points and follows them out. He traces political complications through their bearings on the various Italian states. He mentions no one of whom he does not give a full account. He gives biographies of men of letters and artists, taking each separately, without grouping broad characteristics. He omits nothing of importance for a full understanding of the time; but the reader has to come to his own conclusions by a careful attention to the details as they occur, and is not helped by any broad picture of the leading features. Moreover, he has tried to keep his book within compass by rigidly adhering to the limits of his subject. In the literary and artistic portions of the work these limits are necessarily arbitrary, and as such unsatisfactory. It is impossible to see the true position of Florentine art and literature without some sketch, however brief, of the contemporary progress in the rest of Italy. We cannot really appreciate the patronage of Lorenzo de' Medici without contrasting it with that of the Papacy and the courts of Naples and Milan.

The literary and artistic parts of the book consist of a series of rather disconnected biographies, for which Vespasiano da Bisticci and Vasari are taken as the basis, and even in the arrangement Herr von Reumont has followed his authorities. An example may serve to show how picturesqueness is sacrificed by this method. There is no more striking figure in the history of the early Renaissance than Niccolò Niccoli, the

well-to-do Florentine merchant, who took to literature and art with such enthusiasm that he spent all his money in buying books and entertaining men of letters; who refused to marry that he might not be disturbed in his studies, and lived contentedly on little in a house full of literary and artistic treasures; who ate the plainest food from dishes of the rarest porcelain and drank water out of the daintiest glass. Yet Niccolò loved the Muses with no selfish love, but like another Socrates went forth to teach in the market place.

"Passing one day," says Vespasiano, "Piero de' Pazzi by the palace of the Podestà, and seeing him to be a youth of fair appearance, he called to him, although he had never spoken to him before. As Niccolò was a man of great repute, the youth came at once. When he was come, Niccolò asked whose son he was; he answered he was the son of Messer Andrea de' Pazzi. He asked him what was his employment; he answered, 'Like all young men, I am busied in amusing myself.' Then said Niccolò, 'Being the son of such a father, and being of such fair appearance, it is a disgrace that you do not apply yourself to learn Latin letters, which would be a great ornament to you; if you do not learn them, you will be held in no esteem; and when the flower of your youth is passed, you will find yourself left without any excellence whatever.' Messer Piero, on hearing this, at once approved, and knew that he spoke the truth; and he said that he would willingly give heed to this if he had a teacher who would aid him by his counsels. Then said Niccolò that teacher and books should be left to him, and he would provide everything. Messer Piero thought that there had befallen him a great stroke of fortune. Nor was it long before he, having a good teacher, and being endowed with excellent ability, commenced to have an admirable knowledge of Latin letters, whence he acquired very great honour, and had therefrom great reputation."

Now, since this story is given by Vespasiano in his life of Piero de' Pazzi, it is dutifully referred to by Herr von Reumont in a general historical account of the Pazzi family. It is not alluded to in the account of Niccolò Niccoli, nor is the very striking side of his character which it shows brought into prominence.

In his treatment of his main subject Herr von Reumont is entirely without bias, and is anxious only to arrive at a clear understanding of Lorenzo's time and its difficulties. He is not engaged in drawing social or political morals, but is simply bent on representing the man as he was. He takes Lorenzo as a remarkable representative of a most remarkable age, as the embodiment of all that was characteristic in his time. With a thorough knowledge of Italy at the time, he brings out the intricacies and perplexities of Lorenzo's position in a way that enables us to appreciate very forcibly the strength of character which the age developed.

Lorenzo de' Medici died at the age of forty-three. During this short lifetime he had displayed an astounding versatility of talents, and had exercised an immense activity without any sense of effort or unrest. Everything about him depended on himself. He lived through terrible political crises; he saw his brother murdered before his eyes; he saw himself personally attacked by a coalition of the greatest powers in Italy, and had no means of protecting himself except his own wisdom and the affection of his fellow-citizens. Even after the first storm was over his position was always beset with diffi-

culties. The least disturbance in Italian affairs might be dangerous to him. His business matters were not prospering, and the money of Florence must save him from bankruptcy. At home and abroad his position was precarious, depending on his prestige, on his personal influence, on delicate handling and cleverness of touch. It was not from lightness of heart and the possession of learned leisure that Lorenzo became a poet and a patron of letters. From writing minute instructions to his ambassadors, from poring over his account-books, from answering letters that poured in upon him from almost every part of Europe, Lorenzo passed to the discussion of Platonic theories with Marsilio Ficino, or the criticism of the last new poem of Angelo Poliziano.

It was characteristic both of the man and of the time, not that he did all these things, but that he could do each of them better because he did them all. He took his position as a whole, and worked its several parts together. His political position in Europe depended on the maintenance of his prestige in Florence—his prestige in Florence rested on the fact that he should be in reality, as well as in name, the chief citizen in that brilliant city. As the patron of art, as the central figure of a distinguished literary circle, as the possessor of a magnificent collection of art treasures, Lorenzo held the most prominent position amongst his fellow-citizens.

But this position depended on his personal accomplishments, his tact and kindliness. The practical duties of life must not overwhelm the speculative and imaginative power which alone could attract men of genius. He was patron not through his wealth, for many came round him who wanted nothing, and many of those most devoted to him received little or nothing from him; but he drew men of culture to him by his charm of character, his true warm-hearted friendship, his gifted nature, his noble interest in knowledge. In his society there was perfect equality observed; in his presence even literary jealousy was still; personal quarrels and pettiness had no place in his circle.

So, too, is it in his dealings with artists; they write to him on terms of perfect equality: sometimes, it is true, we find him addressed as "Magnifico," but more often simply as "Lorenzo." His arrangements with them were perfectly business-like; he stipulated how much gold and ultramarine was to be used in the pictures which he ordered; he gave directions about the composition of the picture or the character of the background; he fixed beforehand, with the scrupulousness of a Florentine merchant, the exact day on which the picture was to be delivered.

Men of every kind he bound to him, because they knew that he could understand them, because they felt that he genuinely treated them as equals, and because they were sure that he would always be a staunch and true-hearted friend to them. So indeed he was. He was most anxious to extricate Pico della Mirandola from the charge of heresy brought against him at the Papal court: he wrote letter after letter, expressing himself at last in the strongest

terms about the Pope's want of judgment in driving so learned a man to rebel. After the death of Fra Filippo Lippi he was desirous of removing his body from Spoleto to Florence, and when the Spoletans objected, he commissioned Lippi's son to erect a memorial to his father in the Cathedral of Spoleto. It is no wonder that he was beloved when he thus made the interests of those around him his own. And when Duke Federigo of Urbino saw Lorenzo's art treasures, he wondered, not only at their workmanship and worth, but still more at their number, which surpassed all he could have believed. "How great," he exclaimed, "is the power of fidelity and love! I see here a kingly treasure, but such an one as no king can gather together—yea, though he use gold, or might, or war."

So too it was in politics. It was by a skilful identification of the common interest with their own private interest that the Medicis rose to power in Florence. Lorenzo de' Medici, though only a Florentine citizen, found himself as much the recognised symbol of the Florentine state as was any king or prince within his own dominions. He underwent the perils of royalty, assassination and the like. His whole position is a strange one, uniting, as it does, the opposite qualities of prince and citizen. Lorenzo directed all the affairs of Florence; kings and princes corresponded with him as with an equal, yet Lorenzo in his daily life was but a Florentine citizen living amongst his equals. "Nelle pompe vostre loderò più presto stare di quà dal moderato che di là" is a characteristic piece of advice which he gives to his son Giovanni when he first goes to Rome as Cardinal.

Lorenzo's daily life was simple, undisturbed by the senseless luxury which tended to prevail at the time. He was magnificent enough in public entertainments, but his own table was simple, and was open to all comers: all the members of his household dined with him except those actually engaged in waiting. In 1488, when Franceschetto Cybo, the son of Pope Innocent VIII., came to Florence to celebrate his marriage with Lorenzo's daughter Maddalena, he was delighted with the grandeur of his reception, and his vanity was pleased by the impression it made on the young Roman barons who had accompanied him. He was lodged in Lorenzo's house; his friends had a palace to themselves. But, after a few days of festivity, Cybo was disgusted to find a very simple table. Mortified, he went to his friends, but found them still living in magnificence. Astonished at this, he ventured to ask Lorenzo the reason. "You," he answered, "I have taken into my house as a son, and as such I treat you. Those who came to your wedding are strangers, and them I treat as becomes my position and theirs."

Whether Lorenzo was content with his position, and what views he had for the future, cannot of course be said. He certainly advanced beyond Cosimo in the direction of personal government: he limited the power of the people, and he practically took the state finances under his own control. But the Florentine citizens were still sturdy upholders of their freedom; what-

ever Lorenzo may have wished, he could not have succeeded in making himself prince. The good and the bad of the Medici rule can only be estimated by comparing Florence with other Italian states at the time. One great result of the development of the commercial democracy of Florence was the feeling of social equality. This feeling it retained, even when it had let go much of its political power. Lorenzo was after all a genuine Florentine citizen, and was always true to Florentine feeling and Florentine traditions; so long as this was the case the Florentines were willing enough that he should exercise over them a princely power. It was otherwise with his son, who from an Orsini mother and an Orsini wife had imbibed some of the insolence and turbulence of the Roman nobility.

These are some of the points which Herr von Reumont brings out in his picture of Lorenzo and of his position. It is of course impossible to follow him into detail; but enough has perhaps been said to show the very high value of his work to all students of Italian history. M. CREIGHTON.

The Valleys of Tyrol: their Traditions and Customs, and how to Visit them. By Miss R. H. Busk, author of "Patranas," &c. (London: Longmans, 1874.)

Tales and Legends of the Tyrol. Collected and arranged by Madame la Comtesse A. von Günther. (London: Chapman & Hall, 1874.)

MISS BUSK has written a pleasant description of her wanderings among the valleys of Tyrol, and has turned to good account her acquaintance with the folk-lore of their inhabitants. Her present book is of a less ambitious character than some of her previous works, and is therefore all the more likely to be appreciated by the general reader. To a small circle of story-comparers collections of folk-tales offer an unceasing attraction, but by a large section of the reading public they are considered superfluous. If deftly inserted, however, into a volume of travels, a moderate number of local legends may be not only endured, but even welcomed by subscribers to circulating libraries. And thus the stories with which Miss Busk has gracefully sprinkled the record of her rambles will doubtless find favour in many more eyes than if they had been huddled together in a volume bristling with puzzling quotations, hampered by impeding footnotes, and to the uninformed majority rendered repugnant by an air of superior knowledge.

These stories are mostly of a serious nature, and fruitful in improving doctrine. Even the demons and phantoms which haunt them serve to point an unimpeachable moral, instead of simply rendering ghastly an unedifying tale. In one legend, for instance, we are told how a grasping farmer was doomed after death incessantly to tread a strip of soil which he had stolen from a neighbour, and to drag after him a red-hot ploughshare; until at length a scrupulously honest successor replaced the fraudulently shifted landmark in its original position, and the wearied ghost was freed from its long penance. In another, a poverty-stricken

peasant enters into an unholy compact with a demon "in the old Frankish costume," receiving wealth, and in return agreeing to bear "the cold torment" after death in place of his enricher. So he long leads a merry life, taking the precaution, however, to provide himself with "a whole suit of the thickest rough woollen cloth" to die in. And in the night following his death he is seen to "get up from the bed in all this warm clothing, and shut the gate behind him, and go out into the forest to deliver the spirit which had enriched him." So religious indeed, we are told, is "your whole *entourage* while in Tirol," that even "the very masses of frozen water, arrested by the frost as they rush down the railway cuttings and embankments" are seen in the half-light to assume "such forms as Doré might give to prostrate spectres doing penance." In most countries swallows pass for well-behaved and meritorious birds. Even in Italian Tyrol they are called, we find, *Uccelli della Madonna*, but in North Tyrol Miss Busk hears a legend to their discredit. During the Crucifixion, it runs, "all the beasts of the field went and hid themselves for shame, only the frivolous swallows flitted about under the very shadow of the holy rood, and twittered their love-songs as on any ordinary day." And therefore they never perch on "anything green and fresh," but are always hovering "over nasty dirty marshy places." Surely this story must originally have been told of bats. Much more in keeping with the graceful bird's usual reputation is the Russian legend that while our Lord was hanging on the Cross the sparrows kept crying out *jif, jif!*—he is living!—in order to stimulate the executioners, while the swallows with opposite intent twittered *umer, umer!*—he is dead. Wherefore a swallow is a welcome guest in Russia, as well as in some South Slavonian lands, in which it is said that dead children are supposed to return to their old homes at springtide in the shape of swallows and martins. No better illustration of the religious tone given to old heathenish stories can be found than is afforded by the following improved version of the Rip van Winkle myth. A youth, whose sweetheart was taken from him by death, fell asleep in a cave, and dreamt a dream in which he fancied himself married to his lost love, and living happily with her for many years. When he woke and returned home he found all was strange, and discovered that he had dreamt away a lifetime in the cave. At length in the churchyard, as he bent above his Filomena's grave, a fair form, borne on a moonbeam, appeared to him. "'Who are you, and wherefore sought you me?' he asked. 'I am Death,' replied the fair maiden, 'and for fifty years I have sought thee to lead thee to Filomena.' She beckoned as she spoke, and willingly he followed her whither the moonbeam led." It is instructive to compare this very modern rendering of an ancient tale with the archaic form it assumes in the Norse variant given by Asbjørnsen, and translated by Dr. Dasent under the title of "Friends in Life and Death" (*Tales from the Ejdeld*, p. 160).

The chapter on Italian Tyrol contains some curious and interesting information

about the Orco who answers to our Ogre, and "certain beings called 'Salvans' and 'Gannes.'" The Salvan is evidently a sylvan being enwrapped in little mystery, but his companion Gannes appears to offer difficulties. "May not *Gannes* have some relation with *kan* or *khan*?" asks Miss Busk, referring to p. 322 of Mr. Isaac Taylor's *Etruscan Researches*. But this solution does not appear to be more satisfactory than the ingenious coupling of the southern Orco with the northern "Nök, Neck, Nikr"—the best commentary on which is Miss Busk's own foot-note, to the effect that "mere similarity of sound may lead one absurdly astray; as if anyone were to say that the old fable of rubbing a ring to produce the 'Slave of the Ring' was the origin of the modern substitute of *ringing* to summon a servant!" Mere guesses at linguistic truth are not likely to lead to very beneficial results.

Nor is it only the dabbler in philological studies whom a seeming similarity may lead absurdly astray. That a hasty observer of popular customs may be seduced into a mistaken conclusion is a fact sufficiently well known, but a useful warning to such observers is conveyed by another of Miss Busk's foot-notes. "On enquiring into some very grotesque ceremonies performed in Trent, at the close of the carnival, and called its 'burial,' I learnt that it did not appear to be a Tirolean custom, but had been introduced by the soldiers of the garrison, who, for a long time past, had been taken from the Slave provinces of the Austrian empire, and thus a Slave popular custom has been grafted on to Tirol."

Countess von Günther's *Tales and Legends of the Tyrol* puts forward no claim to be considered scientific, but it is a pleasant story-book, and it contains a good deal of genuine folk-lore. Orco appears in it several times, generally as a black dog of hideous appearance; the ghost of a heart-broken widow wanders about a haunted castle, and "in the year 1720 it happened that a descendant of one who had been instrumental in her husband's death, who was sleeping in the castle, was found dead in his bed on the following morning, with a most fearfully contorted neck." In the "pilgrim's chapel of the holy Romedius, near Thaur," a board is still to be seen, we learn, bearing the mark of a fiery hand, burnt into it two centuries ago by the grasp of a soul in purgatory; and at Brixen stands a lordly mansion, through the old picture-gallery of which wanders by night the ghost of one of its former lords. During the French invasion in 1797, it appears, a heedless stranger who slept in the haunted gallery was hugged by the ghost to death. In the valley of Alpbach "a gold-worm of wonderful brilliancy" is often to be seen, lying motionless "and wrinkled in such a manner that it looks like a golden chain;" in one of the lakes actual chains of gold are sometimes visible, stretching from the depths to the shore. Within the memory of man, or at least of "the men of Inzing and Zirl," a dragon, described as "an enormous thick long worm," was washed by an inundation out of a cavern in which it had resided for centuries. Those who saw it state that it was "a gigantic snake with the head of a

dragon, two large ears, and hideous fierce fiery eyes." To this day "not an atom of green will grow on the meadow where he died."

W. R. S. RALSTON.

The Poems of William Blake: comprising Songs of Innocence and of Experience, together with Poetical Sketches, and some Copyright Poems not in any other Edition. (London: Pickering, 1874.)

THIS pleasant-looking little volume is essentially a combination of two collections of Blake's poems previously issued by Mr. Pickering's house. The *Songs of Innocence and Experience* were first republished by that house in 1839, and again, with some other poems added, in 1866; and the *Poetical Sketches* in 1868. The editor is now, as in the last two instances, Mr. R. H. Shepherd. This is the least incomplete collection as yet in the market, but is nevertheless far from being actually complete: a considerable number of poems from a MS. source that were first published in Mr. Gilchrist's *Life of Blake* are not included here. Mr. Shepherd speaks, in his title-page, of "some copyright poems not in any other edition;" and, in his preface, of "a number of inedited autograph poems of Blake," and of "a few other short pieces written in the fly-leaves;" and he adds, "Not a few of these pieces do not appear in Gilchrist's *Life of Blake*, and, being the publisher's copyright, cannot appear in Messrs. Bell's forthcoming edition." These are misleading expressions. Of "copyright poems not in any other edition," there are here but two—viz., the brief and rather trifling "Song by a Shepherd," and "Song by an Old Shepherd," both of which are quite new to us: these must, we suppose, be the "few other short pieces written in the fly-leaves," and are not only few, but simply two. The "number of inedited autograph poems" dwindle down to one,—the one entitled "Long John Brown and Little Mary Bell;" for all the remainder to which this term is applied by Mr. Shepherd had, before Mr. Pickering ever published them, been printed in Gilchrist's vol. ii. The same remark disposes of the assertion, "Not a few of these pieces do not appear in Gilchrist's *Life of Blake*." Those which do not so appear are merely the "Long John Brown" aforesaid, and probably two or three out of the five lyrics now republished by Mr. Pickering from Blake's *Jerusalem*, his *Milton*, and his edition of Blair's *Grave*; but these five are of course not accurately referred to as "the publisher's [Pickering's] copyright." As to "Messrs. Bell's forthcoming edition," that will have to speak for itself when it makes its appearance. Precise accuracy of announcement, whether applied to a re-edition of Blake, of Shelley, or of whomsoever else, would in the long run count as an editorial virtue. Apart from these small points, we have only to congratulate the admirers of Blake on the opportunity which, through the medium of the present volume, they now have of extending their acquaintance with these mostly delightful and often exquisitely perfect poems.

W. M. ROSSETTI.

THE FIJI ISLANDS.

Ten Months in the Fiji Islands. By Mrs. Smythe. (London and Oxford: John & James Parker.)

PUBLIC attention has been so recently directed to the Fiji Islands by the late debate in Parliament respecting their proposed annexation to the British Empire, that any trustworthy information from an eye-witness as to their capabilities and resources will be welcomed with pleasure, and we therefore make no apology to our readers for introducing this book to their favourable notice, even though the date on its title-page is that of 1864. It consists of a series of letters, written by Mrs. Smythe during a visit which she made to the islands in 1860, in company with her husband, Colonel Smythe, of the Royal Artillery. This officer was sent out by the British Government to ascertain the wishes of the Fijians on the annexation question, and to judge whether the islands themselves were sufficiently valuable to justify their acceptance by Great Britain. The question of annexation was started in 1858, when the first British Consul of Fiji, Mr. Pritchard, arrived in England bringing with him samples of native grown cotton, and a document purporting to be an offer from the so-called King of Fiji, or Viti, Thakambau, to cede his sovereign rights to Queen Victoria, on conditions which we shall afterwards explain.

The importance of creating a new source for the supply of cotton, so as to render us, if necessary, independent of America, was, of course, so great, that the subject immediately attracted the serious attention of Her Majesty's ministers and the Manchester Cotton Supply Association. In the year 1859, the Duke of Newcastle, then Secretary of State for the Colonies, appointed Colonel Smythe as special commissioner to Fiji to investigate the question. Colonel Smythe was accompanied by Dr. Seemann, an accomplished German botanist from Kew, who was recommended by Sir William Hooker to make a botanical investigation of the group. Dr. Seemann took out with him cotton seed of two kinds, the Sea Island and New Orleans. The first never germinated, but the second was successful—seed sown on June 9 producing by the middle of October plants of from four to seven feet high, with very fine ripe cotton pods. From a recent authority we find that the amount of cotton produced in Fiji in 1873 amounted to 14,000 cwt., thus giving promise of a lucrative trade in this important staple, if properly developed and fostered by a more direct communication between the islands and Great Britain than now exists. The great obstacle to the cultivation of cotton in Fiji arises from the difficulty European planters find in procuring sufficient labour to work the estates. The natives have but few wants, and care little to labour for wages they do not actually need. Hence arose the importation of labourers from the New Hebrides and other islands of the Pacific.

Mrs. Smythe in page 153 gives an amusing account of the difficulties they met with in laying out the garden terraces of their house at Levuka. The first band of impromptu workers arrived with no tools whatever

save a couple of long knives, and on seeing Colonel Smythe they all sat down on the ground as a mark of respect. On receiving instructions for their work, they dispersed into the wood to cut staves for digging and cocoa-nut leaves, from which they soon plaited baskets to remove the earth they dug out, rejecting any attempt to provide them with more suitable tools. When Mr. Binner, the resident missionary at Levuka, was building his house, he furnished his native workmen with a wheelbarrow for carrying away the earth. For the first day they used it properly, pleased with the novelty of the thing, the second day they carried it like a box, and the third day they took off the wheel and went about with it by turns on their heads!

On his arrival Colonel Smythe found that Thakambau, the so-called King of Viti, was acknowledged by only a small minority of the chiefs, so that he had no right to cede the islands to another power. Still, even those chiefs who disputed his claim to sovereignty were anxious to place themselves under the protection of British rule, as they were then suffering from a flagrant act of oppression on the part of the United States. In 1849 the house of the American consul had been accidentally burnt, and some of his goods stolen by the natives; while other losses were suffered by American settlers, during the burning of Levuka by a native force. For these losses Commodore Bontwell was sent to demand compensation, and in 1855 he claimed 38,500 dols., making Thakambau responsible for the collection of the fine throughout the islands. Distressed at the exorbitant demand, the Wesleyan missionaries remonstrated with him on behalf of the natives, but the result was that he immediately raised the sum to 45,000 dols. with interest at eight per cent. till paid, to "punish them for their interference." From this moment Fiji (or Viti) was saddled with a heavy debt, which the chiefs in vain strove to discharge. A few of them then elected Thakambau King of Viti, and with him signed the document brought to England by Mr. Pritchard, offering the cession of the Fiji Islands to Great Britain, if she would discharge the debt claimed by the United States. The home Government, however, taught by bitter experience in New Zealand, were by no means inclined to close with the offer hastily, and awaited the result of Colonel Smythe's mission before pronouncing any opinion on the subject. Colonel Smythe, accompanied by Mr. Waterhouse, chief missionary in Fiji, as interpreter, and also by Dr. Seemann and Mr. Pritchard, started on a tour round the islands, convening large open-air assemblies of the chiefs and their people in every place of importance, in order to elicit their real feeling respecting the proposed annexation. With scarcely an exception, he found the proposal favourably received, but nevertheless he himself reported decidedly against it to the home Government: 1. Because, in his opinion, the Fiji Islands were not suited as a mail station for steamers running between Panama and Sydney, as had been represented. 2. He doubted the success of the scheme to grow cotton to any large extent in the islands. 3. He considered the possession of Australia and New Zealand already gave England

sufficient power in the Pacific, rendering her independent of any fresh acquisition there, that might only prove a source of embarrassment in the event of war. He sums up his report in these words:—

"On a review of the foregoing considerations, and the conclusions derived from a personal examination of the islands and the people, I am of opinion that it would not be expedient that Her Majesty's Government should accept the offer which has been made to cede to Her Majesty the sovereignty over the Fiji Islands."

Nothing could be more decided than this opinion, and it is therefore gratifying to learn from one of the speakers in the late debate in the House (Mr. MacArthur) that Colonel, now Major-General, Smythe argued on grounds which have since proved untenable, and that he has recently confessed his error, and acknowledged himself favourable to the measure he had before opposed.

Disappointed by the rejection of his offer, and by the failure of his endeavour to discharge his American debt through the English Government, Thakambau lent a willing ear to the advances of a "Polynesian Company" from Melbourne, who in 1868 promised, on certain conditions, to discharge his debt to the United States, and also to allow him an income of 200*l.* a year. They paid the debt as they agreed, and attracted, by false hopes and promises, a number of emigrants to the islands, but in course of time the company collapsed, and Thakambau was left to his own resources. Many and various have been the schemes proposed and tried since this time for the government of the islands: in 1869 the protectorate was offered to the President of the United States, and declined; and as matters went on getting gradually worse and worse, in spite of the efforts of amateur legislators on the spot, there seemed no chance of peace or order. The white settlers refused to submit to the so-called Vitian Government; and so great was the anarchy that prevailed, that during the last two years scarcely had a day passed without the presence of a British cruiser in the bay of Levuka, to overawe the disputants, and prevent the bloodshed that would have otherwise ensued. As an instance of the mismanagement of the Vitian Government, we may mention that in 1873 the debts contracted by them during the two previous years amounted to 75,000*l.* The ministers who were empowered to spend 89,000*l.* had spent instead 120,000*l.*, and we find it stated in the House of Commons that Fiji is now saddled with a debt of some 87,000*l.*

At length, in January, 1873, the Fijians, through Mr. Thurston, their Secretary of State, again renewed their offer to cede the islands to Great Britain; and again a commission of enquiry was entrusted to Captain James Goodenough, and Mr. Layard, the present Consul in Viti, by Lord Kimberley, under the late Government. The report of these two gentlemen is so favourable to the scheme of annexation that, after grave deliberation, Lord Carnarvon, the present Secretary of State for the Colonies, has directed Sir Hercules Robinson, an officer of known discretion, to proceed to Fiji with a view to the accomplishment of that object. His lordship concluded his speech on the

subject in the House of Lords with these words:—"I believe that the difficulties when boldly faced will not be found to be very considerable, provided the session comes to us untrammelled by unworkable conditions; and although I am aware of the magnitude of the task, I shall not be afraid to encounter it."

Of the advantage it will be to England to acquire such an advanced position in the Pacific as the Fiji group, we think there can be now no reasonable doubt. Between Australia on the one hand, and Vancouver's Island and Columbia on the other, a distance of fully 7,000 miles, we have not at present an islet on which we could form a coaling station. France is about to establish a line of steamers between New Caledonia and Tahiti, making Fiji its central depôt; while another line now runs between Australia and San Francisco, calling also at Fiji en route, and thus bringing the islands within forty days of England. Our interests in the Pacific seem to require the acquisition of such a port as Fiji to ensure the development of the trade that is likely to arise there under peaceful British rule and by the outlay of British capital. The cotton plant has now found a congenial home there; the sugar-cane is indigenous to the soil, and only needs capital and labour to make it a fruitful source of wealth to the settler. Nevertheless, the difficulties before Her Majesty's Ministers in the colonisation and peaceable government of the islands will be neither few nor light. The question of land tenure will be difficult of solution, as there is scarcely an acre of ground in Fiji which is not private property, the ownership vested either in families or individuals. Also there still exist a formidable number of fierce cannibal natives, variously estimated, according to the bias of the person computing, at from 7,000 to 20,000, who are likely to prove most troublesome neighbours to European settlers. Thirty-three years ago the natives of this group were cannibals, whose cruelty was scarcely to be matched in any other part of the world. Up to the year 1854, many of the chiefs had their own human breeding establishments, and the ovens at Bau for cooking human flesh were scarcely ever allowed to grow cold. These cannibals gloried in the number of their human victims, one man boasting that he had himself devoured 172. Undaunted by the terrible character of the Fijians, in 1835 two devoted Wesleyan missionaries went over from the Friendly or Tonga Islands with their lives in their hands, determined to christianise them if possible. They were soon followed by other labourers of the Wesleyan body; and so marvellous is the success that attended their work, that the following statistics were laid before the House in the recent debate by Mr. Baillie Cochrane:—In Fiji, in April, 1867, there existed—chapels, 481; other places of worship, 238; missionaries, 12; native teachers, 38; catechists, 591; day school teachers, 1,351; local preachers, 474; church members, 17,829; attendants on public worship, 90,442; day schools, 1,215; Sunday schools, 750. To say that the Wesleyans have not always acted with discretion in Fiji would be but to confess that they

are human; still, such results after thirty-three years' labour are most astonishing.

So much for the proposed annexation of Fiji, the consideration of which has led us to digress from the immediate subject of this notice. Our readers will find *Ten Months in Fiji* well worth their perusal. It is pleasantly and simply written, and the descriptions it gives of the climate and scenery of the islands are so bright and beautiful, that we cannot but congratulate ourselves on the hope that this group will soon become an integral part of the British dominions.

A. M. E. SMITH.

Li Bourgadeiro. Par A. Bigot. (Nîmes, 1874.)

M. BIGOT, unlike most of the modern poets of Southern France, has published his volume of *patois* poems, *Li Bourgadeiro*, unaccompanied by a French translation. "I do not pretend to write a language," he says in his short preface, "but a dialect—the dialect of my native city, the idiom used by our work-people, with its rough strength and harmony. I have tried to note down a sound that is dying away, the sound that echoed round my cradle and awakened my first smile." So fully alive is M. Bigot to the actual state of the language and its future prospects, that he adds, "It will really be by those who speak French that I shall be understood; they who only speak and understand *patois* being able neither to read nor write." The dialect still spoken in a great centre like Nîmes has naturally been more modified by French influences than the speech used in the outlying hamlets and villages. Bearing less affinity to the original tongue of which it is a corruption, and gradually losing its distinctive character, it stands in less need of interpretation than the dialects which have been, as it were, partially fused anew and restored by the Provençal revivalists. Therefore, while Mistral, Aubanel, Arnavielle, Mathieu and others publish their works accompanied by a translation at once so careful and studied, that in some instances the poet has been suspected of moulding his original verse rather with a view to its second and more widely understood rendering, M. Bigot has thought it unnecessary to add note or glossary to the four editions of a work that does not purport to be the expression of a literary or philological revival.

Li Bourgadeiro is a collection of short poems, the subjects of which harmonise perfectly with the graphic but rather shrunken language in which they are written. M. Bigot seems to be of the same opinion as the critic of *Les Nouveaux Samedis*, who says that Provençal, or what remains of it in the divers dialects, has been used so exclusively by the purely labouring classes that it has become, as it were, debased and materialised in such homely service; and therefore homespun becomes it better than silk or satin. The title chosen by M. Bigot for his book is the name given to the inhabitants of the suburbs of Nîmes,—or rather to that district which lies between the heart of a city and its suburbs,—and which is, in this instance, occupied by silk weavers and artisans. *Li Bourgadeiro* contains no

thought that is either too fanciful or too perplexed for the class it represents, no experience that is not perfectly in tune with the workaday world. M. Bigot's portraits are drawn *con amore*, and in a thoroughly genial manner. We seem to have learned of that kindly simple being, "our old school-master;" we quite understand that "my granny's psalter" should stand among the cherished books of the household, and we can almost join in the lamentations of the "whole neighbourhood" when "Master Jan" dies. In "Marioun" we see how courting days appear when we look back at them through the dim eyes of old age, and in "the bonnet of my uncle Jack" we have the description of one of those characteristic garments which seem to become almost a part of the wearer, responsive to every emotion, like the ears of a sagacious dog. Among the most popular of *Li Bourgadeiro* are the imitations from La Fontaine's Fables—imitations, for M. Bigot does not think of calling them translations. The masterpieces of the great French fabulist are treated in a manner differing much from that which charmed the critical wits and *beaux-esprits* of Louis XIV.'s court. Addressing a very different audience, M. Bigot has been able to reproduce the pithiness and point of the original fable, remarkable at once for its elegance and simplicity, while giving the subject a broader treatment, racy with local speech and customs. His Bible narratives are also excellent—the "Prodigal Son," for example. Here we have an old grandmother sitting at the close of the sultry Southern day beside the open door, telling the little child, who sits with its soft fingers clasped in her trembling hand, "one of those good stories that never tire." Then follows the good story, strangely divested of its Eastern dress. However, if the old grandmother describes the turbulent youngster claiming his inheritance somewhat jauntily, his cap stuck on one side of his head—as she had probably seen many a graceless ne'er-do-weel in her long day—yet she has understood the pith of the matter, the youthful unrest, the hungry absence, the broken-hearted return; these are of all time and of all countries, and M. Bigot tells a Bible narrative in such fashion that we do not wish, as is mostly the case when such subjects are treated, that the grand old story had been left alone.

The author of *Li Bourgadeiro*, as we have already said, sets forth that he attempts nothing beyond writing down a dialect endeared to him by early and popular use—a dialect that is dying out; and his poems, be they imitations, sketches, or love songs, are perfectly consistent with this statement. Unlike M. Mistral, who shows us in *Mireio* and *Calendau* how laboriously and enthusiastically he could revive a once beautiful language, how passionately he could deprecate the thought of its extinction, M. Bigot has made no attempt to ennoble debased idioms, to reintroduce obsolete words: he has just used the speech of his native city with its corruptions as it is actually spoken by illiterate persons, and with a frank recognition of its transitory nature. Whether we feel inclined to sympathize with M. Mistral's enthusiastic hopes, which find a certain

raison d'être in his undoubted genius, or whether we accept M. Bigot's more common-sense view of the matter, we cannot help feeling a keen interest in a literature that has produced so much that is fresh and lovely: leaving it to time to determine whether its sweetness be the same as that which lingers in the song of the dying swan, or whether its joyousness be that of a new birth.

E. MARZIALS.

History of Louis XI.: his Period, his Achievements as Dauphin, his Ten Years' Administration in Dauphiny, his Five Years' Residence in Brabant, and his Reign. By Urban Legeay, Honorary Professor to the Faculty of Letters at Grenoble. (Paris: Firmin Didot, 1874.)

THE long title of this work indicates the bounds which the author has assigned to his subject. He has resolved to write, not merely an account of the reign of Louis XI., but also the whole of the history of that monarch before he ascended the throne, and that of the century to which he belonged; nor have we any reason to complain of the extensive nature of the design. Such a man as Louis XI. cannot be understood unless we view him from the commencement of his career: as King he inherited historical antecedents from the period when he was Dauphin; and in general it is almost impossible to describe intelligibly the conduct of a king who has exerted a powerful influence on the world, without mentioning the circumstances amidst which it occurred, the obstacles which lay in the way, its various deviations, and the causes of its final triumph. I shall therefore make no complaint of matters found in this history which may appear extraneous to the immediate subject; I shall rather find fault with the superfluity of certain details which really concern it. The account of the coronation and of the banquet which followed it might have interested those who are curious about such details of the time, and the historians of the house of Burgundy delight in drawing such pictures at large; the modern reader will here gladly turn over the leaf, and treat in a similar way all the pages which the author has devoted to such subjects. The lively interest which M. Legeay takes in everything concerning Louis XI. has failed to render the author sufficiently distrustful of himself. This interest amounts to an actual passion, and the present work is a striking instance of the advantage and disadvantage of such a sentiment in writing history. The advantage is that the author has shrunk from no amount of research, but has resolved to see and collect as much as possible, in consequence of which he has presented us with the most complete information hitherto furnished respecting that epoch. The disadvantage is that he has too much aggrandised his hero, and not merely aggrandised, but transfigured him. The work is a systematic defence of Louis XI. History at the present day already dissented widely from the judgment formerly passed upon him. It had done justice to many acts of his reign; above all, it had established the importance of the results achieved by

him in strengthening the royal power and extending its dominion. But this is not enough for M. Legeay; he wishes to redeem the character of his hero: "no prince of his time surpassed him in loyalty." It is true I would not undertake to defend him in other respects, but in any case the virtue mentioned might be passed over in silence when we are discussing a prince. Even Comines, that devoted servant of Louis XI.—Comines, whose zeal and devotion for his master is praised by the author himself—does not escape the reproach of having failed to treat him so well as he ought to have done. We know how ingeniously Comines, who in the course of his narrative suppressed any mention of those cruel acts with which Louis XI. has been most justly reproached, takes them up at the close (book vi., chap. xviii.) in connexion with the sufferings and torments of his last days, as if to find in them some expiation for his faults, and so procure his pardon from God and man, "inasmuch as I hope they will conduct him to Paradise, and that they have formed part of his purgatory." The modern historian cannot forgive his predecessor for entertaining such a thought. He will have no purgatory for Louis XI., either in this life or the next. "The point is," says our author, "to determine whether he was, or wished to be, just. Mercy is not always possible to the chief of a great people, whose duty it is to repress so many misdeeds;" and he is of opinion that the acts with which Louis XI. has been so much reproached were but justice after all. The author will find some difficulty in convincing the public upon this head, but he will afford it instruction on many other points, and on this account (with the above reservations) his book deserves to be commended. Unfortunately he died before he could himself superintend the printing of the work. He was therefore unable to give it those last touches which are so efficacious at the time when the manuscript returns to its author in a printed form. He was unable to complete the references to the authors whom he quotes, which is the more to be regretted since the judgments he passes require so much modification. A few months were wanting to his completing a work which had cost him the labour of ten years, and which closed a career of instruction of forty years' duration.

H. WALLON.

Pedigrees of the County Families of Yorkshire. Compiled by Joseph Foster. Vols. I. and II. West Riding. Vol. III. North and East Ridings. (Printed and published for the compiler by W. Wilfred Head, 1874.)

THE goodly array of authorities and helpers which Mr. Foster recites in his short preface should be a sufficient guarantee of the accuracy and care with which this work has been prepared; and we see nothing whatever to object against the claim set up for it, that it will be a work of reference for all time. The topographical and genealogical history of Yorkshire, except in those parts which have been illuminated by the pens of Hunter and Whitaker, has been too much neglected for

us not to give an undertaking like this every welcome, and to hope that Mr. Foster will meet with an ample return for his labours.

A work of this nature affords little scope for detailed criticism, but it suggests a few remarks about the decay and extinction of old families which may suitably find place here. In running the eye over the list of pedigrees preserved for us in these handsome volumes, we meet with many ancient and honourable Yorkshire names, which would have filled an equally prominent position in any like compilation undertaken two or three centuries ago. The name, it is true, exists, but the family in nearly every case, strictly speaking, is gone. As an illustration of this, let us take that part of the West Riding known as the Deanery of Doncaster. When the heralds visited Yorkshire in 1584 they compiled a list of such as by common consent were accounted gentry in each wapentake of this Deanery. Rather more than a hundred persons appear in the list; but few male descendants still remain. The Wentworths became extinct by the death of Peregrine Wentworth in 1809, though many representatives of different branches by female descent have assumed the name. The Wombwells still retain their ancient seat, though not without its having passed from their hands for a while, and having been repurchased by a junior branch which had become enriched by its connexion with East Indian affairs. A few estates, such as Wortley and Bretton, could be named as being still held by descendants of the possessors named in the list, but the male line has been lost. Over families in other divisions of the Riding "Time's effacing fingers" have, perhaps, passed more lightly.

Among old families of whom not a trace is to be found in Mr. Foster's volumes are some whose vicissitudes would furnish as entertaining a chapter as is to be found in Burke. Foremost of these we should place the Reresbys of Thribergh. This family attained its highest position in the person of Sir John, whose Memoirs, illustrating the times and court of Charles II. and James II., have passed through many editions, and still form one of the best histories of that period. His son, Sir William, was left a large estate and much ready money, which was dissipated in a very short space of time: he died in extreme want, a tapster in the Fleet prison.

The Gargraves of Nostell are a similar instance of a family being utterly ruined in the course of a single generation. Sir Thomas Gargrave was a trusty counsellor of Queen Elizabeth, and filled a prominent position in the county as vice-president of the North. One of his grandsons was tried and executed at York for the murder of his servant; and of another, Sir Richard, who succeeded to the estates and dissipated them, it is said that he "could once ride on his own land from Wakefield to Doncaster, and had horses innumerable at his command, but was at last reduced to travel with the pack-horses to London, and was found dead in an hostelry, with his head on a pack-saddle." One of Richard's sisters, Mary, was maid of honour to Anne of Denmark, Queen of James I. On the Queen's death she received 1,000*l.* and 200*l.* a year, a very handsome

provision for those days, but evidently not sufficient for her wants, for in 1639 she petitioned Charles I. for protection against her creditors "to prevent an old servant of the king's late mother from dying miserably in prison." The last known descendant of this family filled the humble office of a parish clerk.

One of the best attested pedigrees, according to the eminent authority Joseph Hunter, in the whole range of our genealogical literature, is that of the Rockleys of Rockley. The chiefs of the line never forsook the valley in which the first ancestor settled himself soon after the Conquest, till they were driven thence by the effect of the civil wars, and some great misfortunes arising out of lawsuits which befel Francis, the last male in the eldest line. Robert Rockley, who inherited little but the blood, the name, and the arms, was a confidential steward of the Kaye family; he is said to have been fond of genealogical research, and his gravestone in Almondbury Church records "that he bore his great disappointments and hardships with patience, and made no merit to himself of his expectations or extraction, though he was the last stem of the ancient and once opulent family of Rockley of Rockley, in Worsborough."

J. J. CARTWRIGHT.

Technical Training. By Thomas Twining (one of the Vice-Presidents of the Society of Arts). Being a Suggestive Sketch of a National System of Industrial Instruction, founded on a general Diffusion of Practical Science among the People. (London: Macmillan and Co., 1874.)

POPULAR education in all its branches has of late taken such a prominent place in public discussion, that the weary reader may almost be pardoned for doubting whether it is worth his while to take up a new book upon the subject. Mr. Twining, however, has done well to publish his views on the matter, not only because he advocates a department of instruction which has hitherto been unduly neglected in this country, but especially because his own large practical experience and warm sympathies qualify him to treat it in an original and comprehensive manner. Long residence in different parts of the continent had taught him the national importance of a technical training for the working classes, while his own warm heart and practical disposition have led him to organise and carry out by his individual efforts a private system of scientific teaching in the poorer districts of London, which, on the one hand, is connected with the ordinary wants of every household, and on the other, leads up to industrial instruction. He had also formed an elaborate collection of all substances and articles which illustrate the economics of daily life, to which the national museums at South Kensington and Bethnal Green are heavily indebted in many ways, but his own collection was unfortunately destroyed by fire in the year 1871. His book, therefore, does not represent a mere speculative theory, as might perhaps be assumed from the title page, but is in reality an elaborate extension of his own experience to

the entire working population of England. That science should be taught in all schools, and that artisans should be instructed in the general scientific theory of their own particular trades, would now be generally admitted by such as have considered what our educational system in the future must become, if England is to maintain her manufacturing position among the nations. It ought to be universally known that Switzerland, Germany, France, and Belgium are more than threatening to outstrip this country in many branches of manufacture, solely because of the superior education they offer to their working men. On this fundamental necessity Mr. Twining does not dwell, but contents himself with referring to the abundant authorities which prove it: his peculiar merit is to have indicated the manner in which this want may be supplied with the greatest economy and the most advantage. The essential feature of his scheme is its utilitarian character. He would bring science down from her throne on high and seat her in the home of every poor man. It is not Abstract Science, as a body of reasoned truth, that he is desirous to have taught, so much as Applied Science, condescending to instruct and guide the artisan in all the needs of his daily life, and to assist him in his trade. No familiar example and no alluring device is to be neglected which may render science more intelligible and more attractive to common minds; and the continual aim of the teacher should be to inculcate that Science is in reality the highest and most useful form of Common Sense. The worldly interests of the pupils are to be appealed to and their curiosity excited, by borrowing the objects of illustration from common life, and by impressing their eyes equally with their ears. That a very considerable amount of sound scientific knowledge can be acquired through this method by average working men Mr. Twining has proved by experiment; for a course of nine lectures, drawn up on this principle, and entitled "Science made Easy," has been delivered in different parts of London during the past eight years to audiences collected almost from the street; and the success of the experiment is shown not only by the numbers and feelings of the hearers, but also by the satisfactory manner in which they have gone through examinations in the matter of the lectures. If then physical science is to be taught in all the primary schools of the land, as has been distinctly recommended in the Second Report of the Royal Commission upon "Scientific Instruction and the Advancement of Science," no mode of carrying into execution such a grand scheme appears so practicable as the method which Mr. Twining here suggests, for, apart from its proved possibility, it contains these three separate advantages: it will augment the health and comfort of every home to which it penetrates, it will guarantee the pleasant acquisition of a general foundation of scientific knowledge, and upon it can be based the particular technical instruction which each several man may want.

To have done only so much as this would fairly entitle Mr. Twining to a high meed of praise, but the purpose of his book by no

means stops here. Its avowed object is to present an elaborate scheme of Universal Technical Instruction, and to advocate the creation of numberless Industrial Institutions, all in subordination to one great Central Technical University. His scheme is not only comprehensive, but also complete; it descends into the most minute details, and anticipates every requirement of organisation, so that if only the money were forthcoming, and the co-operation of others ensured, it might be realised at once in all its fulness. In the Introduction Mr. Twining candidly states his qualifications for such a gigantic task, and also the occasion which led him to grapple with it in such a systematic way, but his execution of the work irresistibly suggests that the time is not yet ripe for such a vast undertaking, and that he would have been wiser if he had devoted himself rather to the development of his general principles and had been less dogmatic in his details. There is something almost French, and certainly Utopian, in the elaborate exactness with which he divides and subdivides his whole subject. Every possible contingency is to be provided for beforehand; nothing is left out, either for ordinary intelligence to suggest or for the natural course of events to supply. There are to be three grades of general scientific teaching; three examinations in technical instruction, each with its own certificate of excellence; and three kinds of teaching bodies—the industrial institute, the technical college, and the central university. This last, moreover, is to exercise a perpetual and searching superintendence over the whole scheme, so as to secure absolute uniformity of action in all the parts; it is to prepare all the text-books of science and manuals of trade, from which alone the teachers are to give their instruction, and from which alone the questions in examination are to be set. Add to this that technical teaching is to become a department of State administration, because "*the Government is the embodiment of the national will*," and there is presented a system which would no doubt be for a time intensively stimulative, but which as certainly, if it could last, would result in worse than Chinese monotony and worse than American corruption. It is unfortunate also that Mr. Twining is too absorbed in his central university to pay sufficient attention to some minor proposals towards the same object, which are more immediately practicable. He alludes, indeed, to a revival of the ancient practice of apprenticeship, but in ambiguous and despondent language; he hardly refers at all to the possible future which may yet be in store for the City Companies; and nowhere throughout the volume is there any mention of trade-unions, without whose co-operation, at least, it is vain to attempt to influence on a large scale the more important national industries.

Into the literary style of this book it were ungraciously to look with an hypercritical eye, for Mr. Twining has done so much in the cause of scientific teaching that he can afford to write loosely about it. The reader, however, will wish that in a work of this pretension he had not adopted that singular method which is no doubt invaluable for giving clearness to a syllabus of lectures.

The pages are absolutely disfigured with capital letters, and the whole book is cut up into a bewildering number of chapters, sections, and subdivisions. It is necessary also to protest against the growing tendency, here profusely exemplified, to borrow needless synonyms from the Greek and other languages. "Autonomous" should not be used where "independent" would better express the sense, and "paraphernalia" has not the same meaning as "apparatus." Before concluding, it should be mentioned that there are to be found scattered through the volume lists of books and pamphlets dealing with the main questions treated of, which not only illustrate the great labour which Mr. Twining must have undertaken, but also point to a repertory of information which cannot be neglected by any one who shall hereafter interest himself in the same subject. JAS. S. COTTON.

Gerald and his Friend the Doctor. A Record of the Experiences of certain Young Men.
By the Rev. Henry Solly. (London: Chapman & Hall, 1874.)

Few books have had trumpets blown more sonorously before them than *Gerald and his Friend the Doctor*. First, "with honour, love, and hope," Mr. Solly dedicates his tale to the memory of the late Mr. Maurice. Next he addresses a long and verbose letter to his "dear Lord Lyttelton." Less fortunate than Mr. Maurice, Lord Lyttelton and Mr. George Macdonald have "toiled," it appears, "through this work in manuscript." As the work is equivalent to about five volumes of a common novel, it does Lord Lyttelton no small credit that he has survived to reply in amoebean strains to Mr. Solly's dedicatory letter. Lord Lyttelton tells us—and as he has toiled through the work he ought to know—that "no one would seriously compare the coarse daubing of *Joseph Andrews* with the delineation of high and pure principle in these volumes, any more than those who know Henry Solly would do him the injustice to compare his character with that of Henry Fielding." We quite agree with Lord Lyttelton, that no one would be the least likely to compare *Gerald and the Doctor* with any masterpiece of English literature. Both Mr. Fielding and Mr. Solly are named Henry, and both introduce their readers to a great deal of bad company, but there all resemblance ceases. Mr. Solly's novel is a novel with a purpose. So far it is no worse than prize temperance tales. But as Mr. Solly's mind is wholly bent on pointing out the evils of a crying sin which is not drunkenness, his tale is much more repulsive and nasty than the feeblest fanaticism of temperance. It is curious that there should still be people who believe that a great amount of unctuous talk about sin, and several horrible examples, can make a story interesting, or its readers virtuous. Surely no one needs to be dragged through the mire of the lowest undergraduate and medical student life, to learn the merits of common decency. The characters in this book are not more refined, or more modern than Tom and Jerry. Their very slang is musty, the "saloons" they haunted are as obsolete as the cities of the Plain.

They speak of "dead smites," they call their friends "quizzes," and dressing they style "Adonizing." They fraternise with policemen, and speak of each other as Growling Bob and Knowing Ned. Their whole existence is like the seamy side of the life of Bob Sawyer, and Ben Allen.

This grossness is probably intended for realism, and the pictures of vulgar profligacy are no doubt meant to deter the young from what Mr. Solly considers "vice, even in its most specious and less repulsive forms." His idea of vice which has lost all its coarseness he states thus: "Flitting irresponsible visits to hotels, coquettish waitresses and chambermaids." These lovely beings people the Armida's garden of Mr. Solly's most refined imagination, and it may easily be guessed what improving company his worse characters are for the ordinary novel reader. In fact, his story is excessively offensive, and the grossness of the ideas is not redeemed by any merit of execution. The subject is quite unfit for the usual public of the novelist. It required all the wit and the tragic power of Mr. George Meredith to save the *Ordeal of Richard Feverel* from a similar condemnation. Mr. Solly gives us ancient slang for wit, and mean horrors for tragedy. The name of the young men whose experiences Mr. Solly relates in such detail, is Legion. From the ruck of medical students and undergraduates of the baser sort, three characters stand prominently out. First there is Gerald himself, the Galahad of this romance. Gerald was fond of the *Beauties of Byron*, and deeply affected by the *religio loci* of the London University. He was eager to elevate the masses, and thought he could best do this by becoming a dramatic poet. But his father, Mr. Arlington, kept him at work in his counting-house, whence he only emerged, we are told, to be the light of the highest circles, and to talk aesthetics to Miss Leila Featherstone. Miss Featherstone, known in the highest circles as "the Beautiful Panther," did seriously incline to talk aesthetics till she fell in love with Harry Fortescue, "the doctor," a friend of Gerald's, and of her own brother's, Alfred Featherstone. Both Alfred and Harry are divided between ruffianly profligacy and lofty aspirations. Leila is no less divided between Galahad and Lancelot, Gerald with his Schiller, and Harry with his life-preserver. Harry tells his love, and Gerald is more diffident. "In the lonely night-watches" the Beautiful Panther consoles herself with writing a poem which ends thus:—

"Then would this foolish heart be still,
And find its earthly rest in thee [Mr. Fortescue].
Nor ever care again to know
If friend of thine [Gerald] cared aught for me."

"At last she took her trouble where alone she could find relief"—and so on. Now Harry, on the whole, was winning easily, when it occurred to Alfred Featherstone to lower his friend's moral tone, and unluckily Leila met her lover when his moral tone was at zero. She was naturally a good deal hurt, and Gerald would have had it his own way, only he was publishing a dramatic romance which was damned by the *Weekly Snarler*. On this matter Mr. Solly, who is himself the author of "*Gonzaga, a Dramatic Tale*," speaks with some feeling. Meanwhile

all the characters except Gerald, and Harry, who has intervals of remorse in which he tries to brain his friends, go rapidly to the dogs. Gerald's brother, Richard, is very like Gerald, and uses this resemblance to seduce a servant girl named Jessy, with whom his brother has Platonic relations.

Alfred is shut up in a mad-house; and, after what is told of his manner of life, we do not wonder at it. Gerald marries Leila, and fondly addresses that Beautiful Panther as his "ducky." Soon after their marriage she hears of the affair of poor Jessy, believes her husband to be guilty, and her health, at the moment peculiarly interesting, gives way. Richard is killed in an accident, but relieves Leila's mind by making a confession before his death. All this part of the plot is as nauseous as it is improbable. We hurry to a conclusion. Harry weds some lady less enlightened, or less particular, than Leila. Gerald addresses the family circle as "Oh, ye beloved individuals." The entertainment closes with prayer and a hymn. We should mention that a sermon of Mr. Maurice's is reprinted in the second volume, without any extra charge.

The book is the most colossal and tedious tract that misguided zeal ever compiled. It is impossible to imagine a work less likely to benefit a man, and more certain to disgust a woman. Nothing we have said conveys an idea of the unction, the raptures, the gush, the flatulent enthusiasm of this offensive production. A. LANG.

CURRENT LITERATURE.

THE second edition of Mr. Fitzjames Stephen's *Liberty, Equality, Fraternity* (Smith, Elder, & Co.), has a preface of some fifty pages, besides foot-notes and some small additions to the text, in answer to the criticisms on the work in the *Fortnightly Review* (June and August 1873), by Mr. Morley and Mr. Frederic Harrison. In this Mr. Stephen explains more fully the grounds of his objection to Mr. Mill's view that self-regarding actions should be free; namely, that the distinction between self-regarding acts and acts that regard others is itself "altogether fallacious and unfounded;" a position which is not easily reconcilable with the main argument of the book—that personal hopes and fears are the only efficient motives of conduct; for if "men are so connected together that it is scarcely even possible to think of oneself except in relation to other people" (p. xii.), it must be equally difficult to act for oneself, or one's own interest, without relation to other people, whose interests might therefore be a part of the ordinary motives for action. The author disclaims the decided convictions on the subject of future rewards and punishments attributed to him by Mr. Harrison, and only maintains that practical morality cannot but be affected by the belief, or absence of belief, in a "Hereafter." And he shows, with some success, that Comte's theory of the temporal and spiritual power as expounded by Mr. Harrison, leaves much to be desired both for practical and philosophical purposes. The dispute is enlivened by a good deal of fierce but seldom ill-natured fencing; only, as all three writers are anxious not to be more dull than the nature of their subject imperatively requires, all are a trifle over-hasty to seize every opportunity that offers of applying their opponent's phrases so as to turn the laugh against him, a proceeding which always has the effect of reminding the person so treated that the subject is too important for trivial jesting. The additional matter no doubt helps to bring into relief

the real nature of the point at issue. Mr. Mill and Mr. Stephen agree that society is made up of a few wise and many foolish men. They agree that it is desirable for the conduct of all to be guided by wisdom. Mr. Stephen has so much faith in the power of wisdom that he believes that, if the many and the few fight for supremacy, the wise minority will win the power of coercing the foolish majority; and that it is right—i. e., for the greatest happiness of the greatest number—that they should exercise this power when they have it. Mr. Mill believed that it was for the greatest happiness of the greatest number that both parties should agree to waive their natural liberty to fight out their differences *vi et armis*, and he carried his faith in the natural power of wisdom to the point of trusting that the moral ascendancy of the minority would be as influential as any government by physical force. Mr. Stephen omits to notice one objection to a policy of coercion in the interests of the moral improvement of the governed—namely, that an act done from fear of punishment is not the same as the same act done from choice, for the intention of the agent is a part of the moral identity of an act; and if the only object is to avoid collision with the policeman, that may be done as easily by evading the letter of the positive enactment as by observing its spirit—a fact which might be abundantly illustrated from the history of any system of law that chances to be either in advance or in arrear of the opinion of the people professedly subject to it. Mr. Stephen does not credit the masses with wisdom enough to recognise the wisdom of their betters when they see it; and obedience to a despotic government, however beneficent, unless it is a voluntary tribute to its wisdom, cannot develop any moral habits in the governed; they only strengthen by exercise the habit of yielding to superior force; and Mr. Mill would have argued that a people so trained would sooner or later demoralise any fallible human ruler.

The Lincoln Pocket Guide. By Sir C. H. J. Anderson, Bart. (Lincoln: Cousins, 1874.)

LINCOLN was one of the most important cities in England, alike in Roman, pre-Norman, and Plantagenet times, and yet nothing worth naming has been done "to set forth its antiquities." Most of the little towns of Lincolnshire have histories of more or less value, but for the capital of the county there has been done absolutely nothing worth remembering. Sir Charles Anderson's little book makes no pretension to be anything more than a guide-book. As such it contrasts most favourably with the vulgar trash that is too often printed and sold by country stationers under that name.

The information is rigidly compressed, but room has been found for a line or two, directing attention to almost everything in the city worthy of note. Unlike most books of its class we have more than the title-page promises. Attention is directed to nearly all the important architectural remains of the county, and there are noteworthy passages anent dialect and folk-lore. The list of the gentry of Lincolnshire in 1672 is a very useful and accurate contribution to local history.

The Dr. Farmer Chetham MS. Edited by Rev. Alexander Grosart. (Chetham Society, 1873.) This is an imprint of a manuscript common-place book in the Chetham Library. It does not contain much that has not been printed elsewhere, and the little that is new is not very important. The first article is "The Arraignment of the Earles of Essex and Southampton." This, the editor assures us, is a much better text than the one given in *The State Trials*. It is, he believes, an account written by one who "saw and heard all he tells."

Among the verse is a string of rhymes, "Of English Beastes," which we do not remember to have come upon elsewhere in print or manuscript. It begins:—

"The kindes of beasts be twenty eight in England yt do breed
Thirtene do noye, six pleasures serue, nine only do vs feede."

The virtues and vices of the several beasts are duly set forth in the succeeding lines. The "Lob-starr" is accused of killing conies. Considering the opinions prevalent on natural history when this book was compiled, we should not feel much contempt for any one not a native of East Anglia who understood thereby a certain well-known crustacean. The stoat was the "beast" the writer really meant, but there should certainly have been a note to tell us so.

This verse writer gives us other interesting information; as, for instance, that hedgehogs suck cows, that the "finest pencyles" are made of the squirrel's tail, and that the dormouse

"On sharpest point and keenest edge, it will both sit & creepe,
Which idle dames delight to see & then to lull asleepe."

Wordsworth, Shelley, Keats, and other Essays.

By David Masson. (Macmillan & Co.) The most recent of these essays are more than twelve years old, and though they have a good deal both of subtlety and of depth, most of them have rather suffered by the fact that we have silently discovered for ourselves a good deal of what Professor Masson has established for us. This is especially the case in the essay on Wordsworth. The essays on Theories of Poetry and Prose and Verse, seem rather obsolete, since we have come to realise that all literature has been developed out of poetry. The personal descriptions both of Keats and Shelley are admirably clear and delicate: the author succeeds better in appreciating the poetry of Keats. In speaking of Shelley, he dwells too exclusively on the suggestive inconsistency between his ethical transcendentalism and his idealisation of Nature as opposed to God. The essay on Scottish Influence in British Literature would be better if the writer had treated of Scotch patriotism as a phase of the Scotch talent for emphasis, rather than Scotch emphasis as an outgrowth of Scotch patriotism.

Tramps in the Tyrol. By H. Baden Pritchard. (London: Tinsley Brothers.) *Tramps in the Tyrol* professes to be a joint account of the adventures of four members of the so-called Tittlebat Club, by name Brown, Green, Black, and White. To criticise this production seriously would be impossible, for there is nothing in it worthy of criticism from the first page to the last. The opening chapter is taken up in starting the pedestrians and settling the straps of their knapsacks, the second is a *réchauffé* of the feeblest jokes possible, on passing the Austrian customs, on British eccentricity and British obstinacy, and these faded witticisms obtrude themselves throughout the book *ad nauseam*. The descriptions of scenery are but slight and very poor, and the greatest adventure on which the valiant four pride themselves is their courageous escape from a cordon of expectant waiters who had assembled on the Lake of Lugano, at the little landing-place, to seize on them as lawful prey, the fixed and unalterable resolve of our heroes being to proceed direct to Maggiore at once. To the immediate friends of the Tittlebatonians, the book may, under abnormal conditions, possibly be of some slight interest. We can only say we laid it down, after a cursory perusal, with a feeling of surprise that anyone could pass through such scenery as the Tyrol affords and find so little to tell us that was worthy of record.

EDITOR.

NOTES AND NEWS.

THE first volume of Professor Corssen's book, *On the Language of the Etruscans*, will be published early in September. It will be a large book, the first volume consisting of sixty-one sheets royal octavo, and twenty-five plates.

WE understand that an English translation of Gregor Samarov's *Am Zepher und Kronen*, which was published about a year ago in Germany, when it created a very great sensation among all classes, will shortly be issued. It deals with some of the most prominent characters who have figured, and still continue to figure, in European politics; and the accuracy of its life-picture is so great, that it is presented to the English public not as a novel, but as a new rendering of an important chapter in recent European history. It is translated by Miss Fanny Wormald, and will be published by Messrs. Henry S. King & Co.

THE same firm will publish during the coming season a translation by the Princesses Orounsoff of B. Markewitch's novel, entitled *Une Question Oubliée*. It will appear in English as *The Neglected Question*, and will be dedicated by special permission to Her Royal Highness the Duchess of Edinburgh.

AMONG other works of fiction to be issued by the same publishers, we note that *Malcolm*, a Scottish story, by George Macdonald, is nearly ready; and stories by Julian Hawthorne and the author of *Thomasina* will both be shortly issued. The title of Julian Hawthorne's new romance is *Idolatry*. The story by the author of *Thomasina* is entitled *Yanessa*.

A NEW edition of the *Older and Modern Ballads of Lancashire*, which were edited by the late Mr. John Harland, F.S.A., the Manchester historian and antiquary, some years ago, will shortly be published by Messrs. Routledge and Sons. Some new matter will be included, and, in the shape of introductory matter, an essay on the Ballad literature of the County Palatine will be given.

THE University of Tübingen will lose one of its most distinguished professors, Dr. Trumpp, who has been called to Munich as Professor of Persian and Arabic. Dr. Trumpp has spent many years in India, and has been commissioned by the Indian Government to publish *The Granth*, the sacred writings of the Sikhs. This work will soon be ready, and promises to be of great interest, not only for the history of religion, but also for the history of the modern languages of India. Dr. Trumpp is best known as the author of a grammar of the Afghan language, in which he claims for that language a closer relationship with the Indian than, as was formerly supposed, the Iranian dialects.

MISS BRADDON'S new novel, *Lost for Love*, is to be published by Messrs. Chatto and Windus on the 15th instant.

A SECOND edition of Mr. Swinburne's *Bothwell* has just left the printer's hands. We understand that Mr. Swinburne is now engaged on a critical essay on the Life and Works of George Chapman, to be prefixed to the second volume of the complete edition of his works, of which the first volume has recently appeared.

THE Imperial Archives of Vienna, in addition to the letters and despatches of Eustace Chapuys examined by Mr. Froude, contain other series of correspondence relating to English affairs in the sixteenth century, which will be transcribed, or abstracted, for the Calendar of Foreign State Papers, edited by Don Pascual de Gayangos. Of special interest, it is believed, are the letters, &c., of Don Inigo Hurtado de Mendoza, bishop elect of Segovia, and of Francois Vanderdelft, who resided in England until 1548. There is also the official correspondence of Jacques de Caestres, M. de Marnie, M. de Montmorency, Sieperus, and others sent from time to time on special missions; besides numerous letters of Cardinal Wolsey, Secretary Cromwell, Bryan Tuke, and Richard Wingfield. Those of Queen Catherine, though not so abundant as at Simancas, are said to be highly interesting and written entirely with her own hand. Almost all the ambassadors of Charles V. in England were natives of the Low Countries, Flemish or Burgundians.

THE *Nation* announces that Professor Bonamy Price is about to visit the United States, leaving England on September 20.

The *Chinese Reader's Manual*; a handbook of biographical, historical, mythological and general literary reference, by Wm. F. Mayers, Chinese Secretary to H. B. M.'s Legation at Peking, has just been issued from the American Presbyterian Mission Press at Shanghai.

PROFESSOR BERNHARD TEN BRINK, of Strassburg, has announced a treatise, "Studies on English Phonetics and English Metres," for the series of publications which he and Professor Scherer, of Strassburg, are editing for Karl J. Trübner, of that town, and which is entitled *Quellen und Forschungen zur Sprach- und Culturgeschichte der Germanischen Völker*. Professor ten Brink is now working at his concise History of English Literature, and hopes to finish the first part by December, and to publish it next April.

A *Grammar of Political Economy*, by Major-General W. F. Marriott, C.S.I., late Secretary of the Government of Bombay, is about to be issued by Messrs. Henry S. King and Co. The author's aim in presenting this new elementary treatise to the world is, firstly, to restrict it to truly elementary considerations in each branch of the subject; secondly, to adopt a perfectly precise and unambiguous use of terms in the sense which most nearly agrees with common use; thirdly, to offer reasonable proof of every proposition; and fourthly, to attain the utmost brevity consistent with proof, so as to invite and facilitate the judgment of the student as well as of the critic.

DR. EMIL BERNARD, of Bonn, has just published a small treatise of ninety-four pages, entitled *William Langland* (London, D. Nutt), in which, after a few notes upon the poem of *Piers the Plowman* and its author, he proceeds to analyse the spelling of the words in the B-text, and to make numerous useful notes upon the grammar, with references to the passages where the peculiar forms occur. The best portion of the book is the careful and very full account given of the system of orthography; an account which is particularly well-timed, now that early English pronunciation is attracting some attention. The vowel-sounds are distinguished according to their Anglo-Saxon or French origin. Thus the A.S. *æ* becomes *a* in *after* (A.S. *æfter*), and *e* in *elde* (A.S. *eldo*); whilst when followed by *g* it gives rise to the diphthongs *ai*, *ey*, *ei*; as in *faire* (A.S. *fæger*), also spelt *feire*; and in *fayne* (A.S. *fægen*). Such a collection of results cannot but be useful; and it is encouraging to find that Early English is studied in Germany with at least as much care as here. It is only in England that *atone* is derived from *tone*.

It is announced that M. Emile de Girardin, notwithstanding his advanced age, has undertaken the chief editorial direction of *La France*, which recently passed into the hands of his old friend, M. Genty, and it is added that he will enter upon his duties on November 1.

THE Roman correspondent of the *Allgemeine Zeitung* states, that in consequence of Father A. Theiner having died intestate, all those of his works, either complete or still incomplete, that have been compiled from materials belonging to the Archives of the Vatican, will be considered the property of the State department from which they were derived. Theiner possessed, however, a very large private library, which is considered to stand unrivalled in regard to the value of its works on canon law and church history, as well as on universal history, and it is rumoured at Rome that this important collection will be sold by public auction. In refutation of this expectation it is stated, on the other hand, that two years before his death Theiner made over his library to the Archbishop of Olmütz, in consideration of receiving a fixed annual payment during his life,

while he at the same time retained the use of the books. It is understood that, in accordance with the agreement then entered into between the Oratorian brother and the German primate, the value of the books was to be assumed to be 10,000 German thalers, on which the former was to receive 10 per cent. annually, and as he only lived two years after this compact was entered into, the archbishop, who has bequeathed the collection to the clerical seminary of Olmütz, has been enabled to enrich his diocese at a very small cost.

AN English translation of Professor Ribot's important work on Heredity, a psychological study of its phenomena, laws, and consequences, will be issued by Messrs. S. King and Co. It is generally admitted that Heredity—or that biological law by which all living creatures tend to reproduce themselves in their descendants—is the rule in all forms of vital activity. The author devotes his work to the study of the question—"Does the law also hold in regard to the mental faculties?" Messrs. King and Co. have also in preparation a book entitled *The Physics and Philosophy of the Senses*; or, the mental and the physical in their mutual relations, illustrated by several plates, in which the author's object is twofold: first, to supply a manual of the senses, embracing the more important discoveries of recent times; second, in discussing the subject of Life, Organisation, Sensibility, and Thought, to demonstrate, in opposition to the Materialistic theory, that the Senses, no less than Reason, furnish proof that an immaterial and spiritual element is the operative element in nature.

THE *Geographical Magazine* announces that the India Office has resolved to print the account of Mr. Burgess's recent researches in the Bombay Presidency, together with its accompanying illustrations. The report contains an exhaustive notice of his discoveries at Belgam, Konur, and Badami, at which latter place are some highly interesting sculptured caves, a complete delineation of which, with a few casts, would form a valuable illustration of Hindu art and Vaishnava mythology—only to be rivalled by what Ajanta affords of Buddhism. Mr. Burgess has brought home altogether fifty-four photographs, between twenty-five and thirty rubbings of inscriptions, about forty ground plans, sections, and drawings of columns, &c., and forty sketches of sculptures.

REGARDING Mr. Betty, the "young Roscius," whose death was announced last week at the ripe age of eighty-three, we extract the following passage from Leigh Hunt's *Autobiography*:—

"His position, which appeared so brilliant at first, had a remarkable cruelty in it. Most men begin life with struggles, and have their vanity sufficiently knocked about the head and shoulders to make their kinder fortunes the more welcome. Mr. Betty had his sugar first, and the physic afterwards. He began life with a double childhood, with a new and extraordinary felicity added to the natural enjoyments of his age; and he lived to see it speedily come to nothing, and to be taken for a very ordinary person. I am told that he acquiesces in his fate, and agrees that the town were mistaken. If so, he is no ordinary person still, and has as much right to our respect for his good sense, as he is declared on all hands to deserve it for his amiableness. I have an anecdote of him to both purposes, which exhibits him in a very agreeable light. Hazlitt happened to be at a party where Mr. Betty was present; and in coming away, when they were putting on their great-coats, the critic thought fit to compliment the dethroned favourite of the town, by telling him that he recollected him in old times, and had been 'much pleased with him.' Betty looked at his memorialist as much as to say, 'You don't tell me so!' and then starting into a tragical attitude, exclaimed, 'Oh, memory! memory!'"

THE aged poet, Runeberg, the greatest scald that Sweden has ever had, has been in extremely weak health for many years past. It appears that as he has lain on his sick bed, at Helsingfors in Finland, he has occupied himself by close observation of the habits of birds, and specially with regard to the causes of migration, and he has at

last put forward a singularly beautiful theory on the latter point. He believes, in fact, that it is the longing after light, and that alone, that draws the birds southwards. When the days shorten in the north, the birds go south, but as soon as ever the long northern nights set in, with all their luminous and long-drawn hours, the wanderers return to their old haunts. It is generally supposed that they move southward to get more abundant food; but why, asks Runeberg, do they leave their rich hunting-grounds to return to the north? The central regions of Europe are in every way more desirable than the wastes of Scandinavia. Only one thing is richer there, and that is light. The same instinct that makes plants firmly rooted in the ground strain towards the light, spreading upwards in search of it, works in the birds, who, on their free wings, fly after and follow it. This very suggestive and poetical notion is further carried out by reference to various analogies in natural history, and the final sentence is quite epigrammatic: "The bird of passage is of noble birth; he bears a motto, and his motto is *Lux mea dux*."

A CURIOUS trial has lately taken place at the Tribunal de Commerce de la Seine relative to an Aldine Horace. M. Gromier, a bookseller of Bourg (Ain), purchased in a sale with some other books, which he bought for a trifle, an Aldine Horace, dated 1509. He placed it in a book cover of Grolier which had adorned another work and priced it in his catalogue at 500 francs. It was purchased by the Comte de Jonage. M. Bachelin Deflorenne, the well-known buyer of old and curious books, applied for it to M. Gromier, who referred him to Count de Jonage; this last expressed his willingness to part with it at the price of 2,200 francs, and sent M. Bachelin Deflorenne at the same time a designation of the book, setting forth that it was a Horace of Aldus, dated 1509, in a Grolier binding of red morocco, with his customary inscription, "Johannis Grolieri et amicorum." On receipt of this description, the bargain was concluded; but when it was once in his possession, M. Bachelin Deflorenne declared that his employers refused to accept the volume; that though the book was edited by Aldus, it was not in a Grolier binding made expressly for Grolier, and that consequently the book had never belonged to Grolier. Count Jonage persisted in his demand to be paid the 2,200 francs, declaring he had concealed nothing from his purchaser, that the description he had sent M. Bachelin Deflorenne was perfectly correct, that the Horace edited by Aldus in 1509 was in a Grolier binding, and that he had only guaranteed the date of the edition and the authenticity of the binding and that M. Bachelin Deflorenne, an "expert" himself, must have well known from Leroux de Lincy's catalogue of the Grolier library, that the only edition of Horace which belonged to Grolier was of the date 1527, and not 1509.

It was in vain M. Bachelin Deflorenne pleaded it was not likely he should have given Count Jonage 2,200 francs for a made-up volume, for which it appeared the Count had only paid 200 francs. The tribunal gave the following judgment:—

"That the book answers the description furnished by Count Jonage, upon which the bargain was concluded; and that if the defendant pretends that he should have had a book with the text of 1509 and primitive binding, the error is his. In his profession of bookseller, and specially of old books, he should have known that the only edition of Horace that belonged to Grolier was that of 1527; that as the parties had agreed upon the price, the sale was good; and that consequently the defendant is sentenced to pay the 2,200 francs claimed, with interest, and the costs of the suit."

ANOTHER Chaucer disappointment. Mr. Walford D. Selby, of the Public Record Office, who is searching the whole of the records during Chaucer's manhood for traces of him, made sure that among

the receipts for pensions of wine must be some of Chaucer's, sealed with his seal, for the daily pitcher of wine granted on April 23, 1374, "dilecto armigero nostro, Galfrido Chaucer." But no; all the receipts after 46 Edw. III. are lost. However, on Oct. 15, 1398, Chaucer got from Richard II. a grant of a tun of wine yearly, from December 1, 1397; and for one delivery of this, in 1399, Mr. Selby has found a fragment of a receipt, half the document and its seal being gone. This is the more annoying, as all the documents on the same file are perfect. Among these wine receipts are two from the poet Gower, with his seal attached. Gower's seal is merely a shield with a chevron. The text of his first receipt, Nov. 24, 1399, is as follows:—

"Noverint universi me Johannem Gouer recepisse die confectiois presencium de Johanne Payn Domini Regis pincerna capitali duas pipas vini de Vasconia quas de dono Regis ad terminum vite mee annuatim percipere (sic) debio. De quibus duabus pipis vini pro presenti anno fateor me fore pagatum et predictum Johannem Payn inde quietum. In cujus rei testimonium sigillum meum apposui. Datum vicesimo quarto die Novebre anno regni Regis Henrici quarti primo."

In the second receipt, dated Nov. 4, 2 Hen. 4, the name is written Gower. [Exch. Queen's Remembrancer. Ancient Miscellanea. Pincerna Regis. Bundle 658.]

There are also hundreds of receipts to Thomas Chaucer as "Pincerna Regis," with the seals of the persons giving them affixed. Mr. Selby's account of the two robberies of Chaucer, on Tuesday, September 3, 1390, at Westminster, and at Hatcham, in the county of Surrey, has gone to press for the Chaucer Society. It gives all the documents connected with the robbers and their fate, from the Coram-Rege and Controlment Rolls.

"AN American view of Emigration" in the *Fortnightly*, by A. B. Mason, gives the impression (though there is no attempt to distinguish between the effects of permanent causes and a temporary depression of trade) that social conflicts in the future will have to be decided in Europe. Lord Lytton gives a sympathetic and discriminative account of Count Gobineau's curious romance of aristocratic despair. W. Boyd Dawkins shows that Ireland was probably the northern limit of the Basques, by a comparison of the skulls found in caves at different points with the complexion of the existing population, and by showing, after M. Broca, that the limit of height in France varies in the same way as the complexion of the inhabitants. The editor gives a *précis* of Mr. Flint's *précis* of French and German theories of history.

In the *Contemporary Review*, Vincent H. Stanton has a candid article on the Ethical Teaching of Christ. He does not get beyond establishing that it contains valuable elements with which we cannot afford to dispense, and does not see that this is inadequate. Dr. Charlton Bastian, on Heat and Living Matter, seems to prove that the school of Pasteur fail to explain his experiments in which infusoria appear in sealed vessels that have been exposed to high temperatures. On the other hand, he has not explained Pasteur's experiments in which infusoria appear or not as germs are admitted or excluded. E. Fairfax Taylor on Longevity, argues that, as some *soi-disant* centenarians are proved impostors, we are not to take any *soi-disant* centenarian's bare word for his age. Mr. Arthur Arnold's reply to Mr. Greg is plausible and vigorous; Lord Lytton's dignified and delicate.

In *Macmillan* Mr. Fleay, in an article headed "Who wrote our Old Plays" rewrites a passage of Otway in the metrical manner of seven or eight writers, beginning with Fletcher and ending with Greene, and applies his metrical tests to *Cymbeline*, with the result that it was begun in 1606, completed between 1607 and 1608, and that act

iv. scene 2 was written separately, as shown by the large proportion of rhymes, and the correct pronunciation of Posthumus. Professor Cairnes' reply to Professor Goldwin Smith on Woman Suffrage is what might be expected from a philosophical and consistent Liberal.

In *Temple Bar* there is an amusing and curious account of the time when pictures were bought for the rational purpose of ornamenting rooms, under the title "Bought and Sold in the last Century."

In *Cornhill*, "Maid of all Work and Blue Books" is an account of the unsatisfactory condition of girls sent to service from district schools. "The Danish National Theatre" is full and clear and sensible. "A Witch Trial in the Fourteenth Century" is an account of the ceremonies with which two women were convicted and burnt at Paris for trying to bewitch a man who had deserted the younger of them.

In the *Saturday Journal*, "The Swing," by Walter Bryce, a young and versatile poet, has a strong taste of Lander's honey. In the *Day of Rest* Mr. Proctor completes his quaint theory that as the earth existed long before it was capable of supporting life, and the moon has long been incapable of supporting life, all the heavenly bodies support life at some part of their existence.

In *Good Words* Mr. George M. Grant gives an account of the Northern Rocky Mountains. In the *Atlantic Monthly* the most remarkable thing is a description of Mr. Moran's pictures of the southern part of the same region, which, according to the painter, is "like hell." G. P. Lothrop's article in the *Atlantic* on "The Novel and its Future," is remarkable for a very high estimate of Turgeneff and Bjørnsen.

NOTES OF TRAVEL.

THE *Finanza* of Alexandria, under date August 6, writes that an expedition is being started in Egypt to survey the physical and geological formation of the Valley of the Nile and the territories adjacent to the Red Sea. One of the most important questions left for the decision of the expedition is the project to direct the waters of the Nile into the bed of an ancient river that formerly flowed through the valley, still called by the Arabs "the valley of the dry river." Should this project be found feasible, it will result in the fertilising and cultivation of vast tracts of land now desert and sterile.

ACCORDING to the *Levant Herald*, a calamity similar in kind to that which has befallen the Thames at Richmond happened on the 16th ult. to the river Carrivitch, near the village of Dogha, in Bosnia. The stream, we are told, suddenly ceased to flow, and its bed became dry land. More fortunate, however, than the dwellers by the Thames, the Doghans, after only two hours of anxiety, were relieved by seeing their beloved river resume its wonted course. Sewage and a Dogha Conservancy being happily unknown, they were able to lay in a large stock of fish, which were left high and dry by the failure of the water, and seem in the end to have alone had a right to complain of this wholly unjustifiable freak.

At the last sitting of the Berlin Geographical Society, it was announced that a letter had been received at the Foreign Office from Dr. Nachtigal, dated April 20. The renowned African traveller writes that he was in good health, that he had received money and letters, and that he contemplated setting out towards home in May, by way of Kartoum, as he considered he had accomplished his task.

THE new nickel coinage which is proposed in Germany, and which has hitherto been expected almost to equal the silver coinage in value, will probably be much cheapened by the discovery of a very rich bed of nickel in the forest of Glönd,

in Norway. The ore contains 3-50 per cent. of pure metal, a far larger supply than has hitherto been obtained from any mine.

THE pine forests on both sides of the boundary dividing the provinces of Nyland and Tavastehus, in Finland, appear to have been suddenly desolated by the ravages of a great caterpillar. The *Helsingfors Dagblad* describes this plague in minute terms, which leave no doubt that the insect is the larva of a hawk-moth, in all probability *Sphinx Pinastri*. More than 6,000 acres of forest have been entirely destroyed, the larvae stripping off leaves and bark, and leaving nothing but this year's shoot.

FROM the *Levant Herald* of the 15th ult. we learn that the accounts from the famine districts in Asia Minor were daily becoming more alarming, and that the prospects of the coming year inspire grave anxiety and call for energetic action on the part of the Government. The headquarters of the famine are comprised in a district of over 40,000 square miles, lying between Angora, Koniah, Nigdeh, and Tokat. Taking the most moderate estimate, the deaths from starvation and disease have already amounted to 150,000, and it is feared that a famine of still greater intensity is inevitable in 1875. Brigandage and violence were adding to the misery of the famine-stricken districts. If left to itself, without great efforts from the Government, it will be utterly impossible for the country to rally even in the third year.

THE same journal strongly deprecates the obstructive policy of the Ottoman Government, which has hitherto deferred giving its consent to the establishment of an English company in Anatolia for the working of the large mines of lignite existing in the mountainous ranges of that province. The company has been in existence for two or three years, and is prepared to work the mines effectually and also to construct a railway to Magnesia for the conveyance of the mineral not only to that town, but to Smyrna and all the surrounding districts. A supply of this combustible would be of the greatest value, for the inhabitants of that populous and industrious district are now dependent on brushwood as their only fuel, for their numberless brickyards, distilleries and manufactories. In all other European states, says the *Herald*, the employment of foreign capital and foreign industry is welcomed with pleasure; the Ottoman Government alone discourages any foreign enterprise whatever, and the country suffers accordingly.

THE correspondent of the *Russian Gazette de l'Académie* writes that an Englishman of the name of Hobham was organising a colossal undertaking which was to cost five million roubles, and was nothing less than the diversion of the waters of the Arpatchai into channels to be cut throughout the length and breadth of the vast desert plain of Sardar Abad, for its thorough fertilisation and cultivation. Mr. Hobham has already obtained the grant of the plain from the Russian Government; the works have commenced, and Mr. Hobham hoped to attract 100,000 Irish and German emigrants to settle on the reclaimed lands.

DR. HEINRICH SCHLIEHMANN has sent an account to the *Allgemeine Zeitung* of a visit which he and his wife have recently made to Thermopylae, Mount Parnassus, Delphi, and other spots sacred to history and art. After making their first stop on the island to which Patroklos, the admiral of Ptolemy Lagos, has given his name, and where the fortifications which he raised may still be indistinctly traced, and rounding Cape Sunium, the southernmost point of Attica, the travellers made a careful examination of the remains of the neighbouring Temple of Athene, whose thirteen Doric pillars, with their well-preserved architraves, may be seen far off at sea. This sacred fane, which is not generally enumerated among those erected by Perikles, is an undoubted relic of the best periods

of Hellenic art, and must have been erected about the year 422 B.C., at the time of the fifty years' peace between Sparta and Athens, and when Nikias, who was subsequently slain in Sicily, was still working his mines at Laurium with 1,000 of his own slaves. Whatever may have been the value of the returns yielded by those much-vaunted fields of gold, certain it is that in these days they have brought only disappointment and heavy losses to all concerned with them, and it would almost seem as if its memories were the only relics which the region yet preserves of its past riches and glories.

Leaving Sunium, Dr. Schliemann and his enthusiastic companion made their next resting-place on the plains of Marathon, where, not far from the water's edge, may still be distinctly traced the outlines of the lofty mound under which were interred the 102 Athenians who fell by the hands of their Persian foes in that memorable battle (490 B.C.). An hour's further ride brought them to the present village of Sykamino, on the Boeotian side of the Asopus, where a few ruins indicate the site of the ancient Oropus, taken and destroyed by the Thebans in the year 402 B.C. Here the ground on which the traveller treads is truly classic. On one side of him he sees in the Delisi of the present day the ancient Delium, which, with its harbour at Tanagra, and its temple dedicated to Apollo, was made memorable by the battle in which the Athenians were defeated by the Thebans, and where Alkibiades saved the life of Sokrates, who on his part secured the safety of the young Xenophon. On the other side lies the ancient Eretria, whose earliest history dates from Homeric times, and which, after sending forth its sons to fight at Salamis and Plataea, and joining with Sparta to humble the power of Athens, was forced in 198 B.C. to succumb to Rhodes, after having for a time been under the yoke of the kings of Macedon. Its rock-hewn theatre and the Cyclopean walls of its Acropolis are all that now remain to mark its site.

Still more interesting, however, are the ruins of the ancient Aulis, reared aloft on their steep rocky pedestal; for here at the foot of the lofty heights are the twin harbours which dispute the fame of having gathered within their waters the fleet of 1,200 ships which Agamemnon led forth for the capture of Troy. The northern bay, now known as Laspi, seems, however, to be alone entitled to claim the honour, since the southern harbour could scarcely, as Strabo remarks, have given mooring room to half a hundred galleys. Here, and at Chalkis, where a bridge unites Euboea with Boeotia, are unmistakable evidences in massive accumulations of rubbish and debris of every kind, that the exploration of the spot would reward the archaeologist with abundant results. But, as Dr. Schliemann remarks with regard to Delphi, under existing circumstances, while the finder must give up to the National Museum the half of what he recovers from his own land, it would be in vain to hope that any private individual would be disinterested enough to undertake costly labours of this kind.

At Lamia, where Antipater was besieged for some months in 323 B.C. by the allied Greeks—who, after the death of Alexander, strove to throw off the Macedonian yoke—not a trace of a ruin can be detected for which a Hellenic origin could possibly be claimed. Pausing there only long enough to engage horses for the mountain ascents which he meditated, Dr. Schliemann and his companions crossed the Sperchios, which now embraces in its waters the ancient Dryas, Melas and Asopus, and after passing the hot sulphur springs of the Phoenix of Herodotus, where a hydropathic establishment now stands, he began the ascent to Thermopylae by the Anopaea pass, through which Ephialtes led the Persians. At the eastern entrance stands the mound mentioned by Herodotus, to which the Spartans retreated to make their last desperate stand, and till within the last few years the red marble blocks which had formed the pedestal of the monument erected to Leonidas

still remained. Now, however, they are all removed, and have been used to repair a neighbouring mill.

After ascending Mount Parnassus, and passing through Amphissa, the modern Salone, Dr. Schliemann went on to Delphi, now Kastri, and made a prolonged and careful examination of the entire *locale*. The place had been nearly destroyed since the travellers had visited it five years before, for in the interval nearly all its houses had been thrown down by the earthquakes of 1870, and now one common ruin envelopes the remains of the sacred buildings of old, and the poor dwellings in which recent generations have found shelter.

In Dr. Schliemann's opinion, the only possible means of penetrating to the buried treasures of the temple would literally be to leave no stone unturned, but to demolish every dwelling, and dig down till the very foundations of the temple were reached. This could only be done by purchasing the entire village, which might be done, the Professor suggests, at a cost of 200,000 francs. Here, then, is an opening for archaeological enterprise worthy of a millionaire. And if, as he surmises, no private individual will be found able and willing to enter the lists of exploration against the whole array of Greek diplomacy and bureaucratic restrictions by which it is now assailed, it is to be hoped that some Government may feel sufficiently rich and at peace with the rest of the world, to devote a portion of its surplus funds to the task of unveiling the seat of the ancient oracle of Delphi.

The Alpine Journal. No. 45. (London: Longmans & Co.)

The Alpine Club Map of Switzerland, with Parts of the Neighbouring Countries. Edited by R. C. Nichols, F.S.A., F.R.G.S., under the superintendence of a Committee of the Alpine Club. (London: Longmans & Co., and E. Stanford.)

THE current number of the *Alpine Journal* contains two papers on a new way to reach old peaks—one by Mr. Pratt-Barlow on the Grand-Paradis from Cogne, the other by Mr. Pendlebury on the Schreckhorn from the Lauteraar-Sattel. Mr. Holzmann contributes an elaborate and valuable account of the Ampezzo-Sexten-Auronzo Passes, and Mr. Bryce some interesting notes on Mountain Climbing in Iceland. The days of Alpine exploration, strictly so called, are nearly over, for a virgin peak is about as rare in the Alps as a bustard is in England, and mountaineers are already beginning to look further afield. Mr. Freshfield showed the way to the Caucasus in 1868, and one of his companions, Mr. Moore, has during the present summer successfully led a second expedition into the same region. It does not appear from Mr. Bryce's account that mountain climbing is exactly one of the attractions which Iceland offers to the traveller, for the difficulty, he says, is not so much to get to the top of the peaks as to reach their foot across the inhospitable desert which generally separates them from the inhabited parts of the island. Yet in the way of exploration there seems much to be done, if any one cares to do it.

However, if the Alpine Club has little left to conquer within its allotted territory, it has still much to do in the way of surveying and mapping its conquests. Much has already been done by Messrs. Reilly, Nichols, Tuckett, and others for the survey of various outlying parts of the main Alpine chain; and the maps which the first-named gentleman has from time to time published are a splendid monument of individual energy and devotion. It is well known that Mr. Reilly's map of the chain of Mont Blanc was the first to lay down many of the details of that complicated system with any approach to accuracy, and though his work may to some extent have been superseded in the map subsequently published by the French Etat-Major, yet it is no slight credit that the unaided work of a single amateur should be able to challenge comparison with that of a trained body

of engineers with all the resources of the French War Office at their back. But the isolated efforts of individual members have now been eclipsed by the publication, under the auspices of the Alpine Club, of the splendid "Map of Switzerland, with Parts of the Neighbouring Countries." This map has been ten years in preparation, and it has throughout been superintended by a committee consisting of Messrs. Leslie Stephen, Hall, Reilly, Blackstone, Longman, Moore, Whympere, Nichols, Blanford, Cowell, and Rivington,—names which are a sufficient guarantee that the best skill and knowledge which the Club could command have been brought to bear on the work. It is little to say that, next to the magnificent and unrivalled work of General Dufour, published by the Swiss Government, this is the best map of Switzerland to be found, for there is simply no other which can for a moment compare with it. The best existing maps profess only to be road maps, and, provided they give the main routes with accuracy, they are content to leave the mountains and glaciers and the secondary and lateral valleys to the taste of the engraver. The proceeding of the Alpine Club map is very different: it endeavours, within the limits of its scale (1 in 250,000), to give a faithful transcript of the country's surface, based on the latest and most accurate surveys. It may be doubted, perhaps, whether the scale adopted is the best that could have been chosen, but there are objections to almost any scale. A large one soon becomes cumbersome, a small one is incompatible with accuracy of detail; and the choice is a matter of delicate consideration which, doubtless, was carefully weighed by those who are responsible for it. Of course for the central parts of Switzerland the Federal map must still remain the standard authority: its larger scale (1 in 100,000) gives it an advantage which no care or delicacy of execution on a smaller scale can outbalance. But the bulk of the Federal map is a great disadvantage to the pedestrian; and here the comparison is, of course, wholly in favour of the map before us. Moreover, beyond the boundaries of the Swiss Confederation the Federal map is useless; indeed, it is worse than useless, for it is always bewildering and generally misleading, whereas the Alpine Club knows nothing of political boundaries, and carries its accuracy up to the extreme margin of the map. There is also much information in the new map which it is beyond the purpose of the Federal map to supply. The sites of battles are given with their dates; special points of view are indicated, though not so plenteously perhaps as could be wished; inns in remote parts and isolated spots are marked, and the various kinds of routes from high roads to glacier passes are, on the whole, clearly and distinctly discriminated. In addition to all this, the sites of the chief lake-dwellings are shown, and the nature of the antiquities found at each spot, in these and other cases, whether of the Stone, Iron, Bronze, or Roman period, is indicated with simple but clear marks of distinction. This is a feature peculiar, so far as we know, to this map, and one of great interest and importance. The map is so full of detail, and so accurate, that it is perhaps ungracious to find fault; but there are one or two insignificant omissions we have noticed which might perhaps be supplied in subsequent editions. We have already said that the points of view are rather meagrely indicated; we may, perhaps, add that they are somewhat arbitrarily selected: every one knows the Chaumont and the Rigi, but why should not the Schilthorn, the Lauberhorn, the Spärrenhorn, the Bella Tola, or the Dent de Jaman have the distinguishing star? Again, we find no indication of inns on the Abendberg near Interlaken, the Männlichen, or the Brienz Rothhorn, though the latter is starred as a point of view. The editor of the map cannot be unaware that the pass of the Tête Noire has been used for charrs for the last two

years, but the char-road on the map ends still at Barberine to recommence at the Forclaz; again, the pass of the Schein or Schyn, between Thusis and Tiefenkasten, was certainly passable for charrs in 1668, and is, we believe, now a tolerably frequented road, though it remains a mule-pass in the map. The omission of the railway lately opened between Monza and Lecco is of less importance, as this occurs in the part of the map which is not yet finished. We are disposed to think that the general indication of mule-paths throughout the map, by a thin and almost imperceptible line, needs revision, as where the shading is at all dark the line is apt to coalesce with it. No one, for instance, on looking at the map would suspect the existence of an excellent mule-path from Barberine by Finshants and Salvant to Vernayaz; it is a pity that some plan has not been devised for discriminating between well-made paths like this or the Gemmi, and mere variable tracks like the Zmeiden or the Col de Torrent. Of course, the purpose of an accurate map is not to give pleasure to those who know the country, but to give information to those who do not: on some of the paths we have mentioned a lady might ride with ease and safety, on others she would need considerable courage and endurance to do so, and such a distinction as this is certainly worthy of being noted. These, however, are after all but small blemishes in a noble work. England has at last produced a map of Switzerland not unworthy to be compared with the best efforts of the Swiss themselves, and the Alpine Club has furnished a triumphant answer to the ridicule and sneers so often levelled at a society which many ignorant persons, and some who ought to know better, are too apt to regard as a mere association of gymnasts.

A LONDON ALDERMAN'S JOURNAL, 1796-7.

(Concluded from page 237.)

"Tuesday, 27 June. The papers give us to-day the progress of Parker's trial yesterday, which terminated in his conviction on all the charges and his sentence to be hanged, when & where the Admiralty may appoint, which, though the best now, is a very poor atonement to the country for his crimes. In the evening I walked several times round Finsbury Square, a place which now approaches nearly to the elegance of the squares in the west; I remember it a place for rubbish, and not a house built.

"Thursday 6 July. This day commences the new tax on newspapers, now advanced from 4½d. to 6d., so that in consequence I have given up the Morning Chronicle. It is now per annum 7l. 16s. 0d. to which add for the delivery here, making it 8l. 9s. 0d. The government will therefore lose by me 6l. 17s. 0d. instead of getting 1l. 19s. 0d., and I am persuaded that such will be the operation of the tax that the revenue will be lessened rather than increased by the impost.

"Saturday 8 July. Mr Pitt on Thursday brought a message from the King praying his faithful Commons to enable him to assist his faithful ally, the Queen of Portugal with a little cash which was of course granted, and £200,000 immediately appropriated as well as a farther sum of £300,000 for such other services as His Majesty may think proper. It is most extraordinary and one would really suppose it an experiment of the minister to try what the patience and the temper of the people could bear. The same argument exactly suited the purpose when we subsidized the King of Prussia, the Emperor of Germany, the King of Sardinia, and all the other carcass butchers of the continent. The King of Prussia has deserted our cause in a manner most disgraceful; the Emperor of Germany has done all that he could do, but he is in the hands of his enemy and compelled to sue for peace; the King of Sardinia has submitted to the victorious Frenchmen, who have silenced all the other lesser powers at least into terms of neutrality, overset the republics of Venice and Genoa, conquered Rome and are now giving law to the rest of Italy. And now forsooth because there is no other power to whom we can send our money, Mr Pitt has found out that it is proper and prudent to send £200,000 to the Queen of Portugal, and for what? If peace is to follow negotiation it is unnecessary surely to arm the Portuguese,

and if war is to continue of what avail is our money? When France after the mighty battles she has fought and the conquests she has made, is such a country as Portugal to stop her in the career of glory? Of what moment is the fleet of Lord St. Vincent, and all the ships and all the men and all the money, which the folly and stupidity of Mr Bull may send, in a contest between the kingdom of Portugal and the efforts united of France & Spain? It is not a drop of water in the ocean. She must fall and very likely without a battle; but Mr Bull is really beat blind and has lost all his senses together.

"Thursday 13 July. Charles Macklin, the veteran actor, died on Monday in his 98th year.

"Saturday 15 July. A few days ago died at his house in Beaconsfield the celebrated Edmund Burke, a man of very superior talents, and who for many years of his life maintained a character of incorruptible integrity, but his junction with Lord North after the American War, his unrelenting malicious persecution of Mr Hastings, and his acceptance of a pension from Mr Pitt, whose public conduct for many years he had reprobated in terms of the most bitter severity, mark him in my opinion as a corrupt unprincipled impostor, and from being the great defender of the rights of the people and the zealous supporter of the liberties of mankind has proved himself destitute of every honourable motive and as flagitious an advocate of the most profligate and wicked administration that ever existed in this country from the period of the Revolution. He was in his 68th year.

"Wednesday 19 July. A messenger from Lisle with the contre-projet of the French Directory, containing terms on which they are willing to shake hands with us, viz.: To restore all the conquests we have made from the French and their allies:—to restore all the ships we took from them at Toulon, and an indemnification for these we damaged & burnt &c. &c. Stocks fell 2 per cent, and people in general not quite so sanguine as they were in expectation of peace.

"I was much disappointed in my pursuit of a dinner, & at length—rather than go without—brought to and had a good beef-steak and a pot of porter and a salad at Mr Jay's in the Old Jewry, the oldest beef steak house in London, price 17d. From thence to my hospitable friend in the Borough, who gave me a bottle of excellent old port, and afterwards to Mr Nutt's where I eat my supper & chatted till the usual hour.

"Thursday 20 July. The king this day put an end to this Sessions of Parliament in rather a short speech, with thanks for their zeal, attention and service. House adjourned to the 5th Oct. I dined well at the banking house of Roberts & Co. Lombard Street, with Mr Charles Hornbyhold, Mr Ellis Wear, and Mr Berwick, with a Mr Buller, an eminent counsellor of Lincoln's Inn. We chatted pleasantly till the arrival of the Mail coaches, which terminated our repast. I think there were nine of them collected & very punctually proceeded on their respective journeys, viz. Edinburgh, Glasgow, Wisbeach, Ipswich, Newmarket, and Dover, &c.

"Saturday, 22 July. Dined with Mr P. in the Borough, with whom in the evening I walked across the fields, and after parting bent my steps to the Hay Market Theatre, where I have not been for some years. The fourth act of the *Heir at Law* a new comedy written by Colman was on; it met with considerable applause and I think deservedly so. It was not such stuff as *The Cure for the Heart Ache* which attracted public notice so much the last season at Covent Garden, but possessed a portion of *vis Comica*, and though I could not understand the whole of the story, I can without scruple pronounce that it has merit and I should not think my time ill-spent to be present at another night's representation. *Lock and Key* was the afterpiece, in itself a compound of nonsense with two or three pretty songs, but there is no withstanding the incomparable talents of Fawcett and Munden. I drank a glass of punch on my return at a coffee house in Fleet Street and the clock struck twelve before I arrived in King Street.

"Monday 24 July. . . . On Friday died—aged 62 only—at his seat near Plastow, Peter Thelluson Esq., thought to be the most wealthy commoner in England. He was a merchant in London & obtained his money by his own industry and good fortune, besides expending a great deal, leaving behind him

upwards of £600,000, not obtained exactly by accumulated profits in trade, but by contracts, loans, stocks, &c.

"Tuesday 25 July. I dined well as I always do at Mr Nutt's on boiled mutton and roast veal; called in the evening at John's. The topic of general conversation was the will of Mr Thelluson, who has left a widow, three sons and three daughters. His sons have all of them lived fast and at a great expense, with the father's knowledge and approbation, who till the last hour of his life assured them of his affectionate regard, and of the satisfactory (to them) distribution of his property. He has left them £7500 apiece only, to his daughters £12000 each, to his widow the interest of £25000, three per cents. & of £6000 Long annuities, making together £2140 per annum. His vast estate in Yorkshire to be sold and with the residuum of his fortune real and personal to be vested in trust for the benefit of his first great grandson; but in case of failure he bequeaths all to the nation in aid of the National Debt. A more nefarious will never was made surely!

"Sunday 10 Sept. The Courier of last night brings accounts from Paris of the 5th and very important news. No less than the detection of another conspiracy to restore the monarchy of France and Louis 18 to the throne; and what is more extraordinary General Pichegru, the man who conquered Holland for the Republic, is at the head of the conspirators—arrested for the crime & committed to prison. Boissy d'Anglais, Camille Jourdan, & the names of many others are mentioned to have been likewise arrested—in the whole 64 of the Legislative Body. The barriers of Paris are shut, a Committee of five is formed to examine into the state of the nation. The Directory and the other councils have adjourned to other places for their debates & their sittings declared permanent. What influence this new commotion will have on the negotiations at Udina and Lisle is a very natural question but difficult to decide.

"Wednesday, 20 Sept. A second edition of the Courier announces that the negotiation at Lisle is abruptly broken off, that Lord Malmesbury was ordered to quit France in 48 hours and in consequence was on Monday evening actually in Calais, & his carriage embarked on board the Diana packet. Many affect to believe that this news is untrue, but it appears too correctly stated to be doubted by a man of common sense—the natural effect of a cause, whether true or false, which the Directory of France have endeavoured to impose on the minds of the people, namely, that English money and English intrigue has been at the bottom of the late conspiracy. Under such suspicion, real or pretended is it likely that the Frenchmen should believe in the sincerity of English government at the moment it is discovered that we have been endeavouring again to introduce another system of anarchy and blood, to subvert the existing government of Republican principles, and restore Louis 18 to the throne of his ancestors. That that was the disposition, and is the present disposition of this country and the absolute cause of the war, no man on earth, who has both eyes to see and ears to hear, can possibly doubt; and the idea never will be abandoned but from necessity—and that it must be abandoned (as far as appearances go) is as clear as the sun, for of the destruction of the Republic by force even Mr Bull is not mad enough to dream now.

"Thursday, 21 Sept. The return of Lord Malmesbury is true. He crossed the water on Tuesday & yesterday arrived in London. The fall of the stocks on Saturday was certainly a prelude as well as a proof that somebody was in the secret & profited by what he knew—3 per cents. now 47 and the Loyalty Loan at 1½ discount. What was the point which terminated the negotiation we know not at present.

"Friday, 14 Oct. to 18 December inclusive.

" . . . Without any particular cause I have been too negligent of my Journal, yet many events of great importance have taken place. The signal victory of Admiral Duncan over the Dutch off the coast of Holland comes the nearest to our feelings. It was fought on the 11 October, and the Admiral created a viscount. . . . Frederick the 2d King of Prussia died on the 16 Nov., and whether we consider his character as a Man or a Monarch, perhaps he has not left a greater Rascal on earth. . . . Mr Pitt's friends now publicly condemn his conduct, and many of them will find out to be true, I dare say, what I have in many places

predicted, that he has got us into the scrape, but has neither honor, honesty or ability to get us out.

"Tuesday 19 Dec. The day appointed by the King for the important victories gained over the French by Lord Howe on the 1 June 1794—over the Spaniards on the 14 Feb' and over the Dutch by Lord Duncan on the 11th Oct. in the present year. His Majesty &c. went to St Pauls in procession. The spectacle was grand and the weather favoured the event.

"Bedford. Friday 25th of May 1798. Why I should have discontinued this journal till this date from the commencement of the year I know not, and still more extraordinary that I should have been so negligent when I have had much leisure time to have recorded the important events which have occurred—and writing I have ever found an amusement rather than a labour. The continuation of a diary of this sort by many may be thought dull and uninteresting, but as I write for my own pleasure and not for the satisfaction of other people, I do not see the reason why I should not ride my own hobby in my own way. Thus I proceed—We left 42, Old Broad St on the 10th of January before three in the afternoon, after having been kindly and very hospitably entertained from the 11th October. At the bottom of Barnet Hill nearly opposite the tenth milestone we were stopped and robbed by three foot-pads craped. One held the horses and one came to the door on each side the chaise. Little dreaming of such an attack while it was yet day, I was taken very much unprepared for the visit, and lost a good deal more property than I ought to have had unguarded. They robbed me of about £46 in bank notes & money, & took with them M^r M's dressing box, which with the trinkets could not be replaced for less than £50. It is a very awkward situation for a man to be in—to be placed in a confined situation with pistols at your breast, in the trembling hands of such rascals. Mrs. M. was a good deal alarmed when the danger was over but behaved very well at the moment."

In spite of the sentiments expressed in this last entry, the diary does not seem to have been ever resumed. Such few facts as we have been able to gather establishing the identity of the writer may be added in conclusion. The manuscript from which these extracts have been taken is described as the Journal of "G. M. Macaulay;" and it is evident from numerous entries in it, not considered of sufficient general import to quote, that the writer's proper home was at Bedford; indeed, fully one-half the diary relates to friends and pursuits in that town and is consequently of great local interest. To the above information enquiry and research have been able to add nothing beyond the following obituary notice in the *Gentleman's Magazine* for 1803:—

"March 5. At Bedford, of a quinsy, George Mackenzie Macaulay, esq. alderman of Coleman Street ward, to which he was elected in 1786; and in 1790 served the office of sheriff. He was an active and intelligent magistrate; and possessed very strong natural abilities, highly improved by a cultivated education. He had been twice married; and has left a very numerous family by each of his wives. To his widow the Corporation of London have, in a very handsome manner, unanimously voted an annuity of 100*l*."

SELECTED BOOKS.

General Literature and Art.

- DOZON, A. Les Chants populaires Bulgares. Paris: Maisonneuve. 7 fr. 50 c.
GAUTIER, T. Portraits contemporains: littérateurs, peintres, sculpteurs, artistes dramatiques. Paris: Charpentier. 8 fr. 50 c.

Theology.

- GREGORI BARHEBRAEI Chronicon Ecclesiasticum, ediderunt etc. Joannes-Baptista Abbelcos et Thomas-Josephus Lamy. Paris: Maisonneuve. 36 fr.
HAUSERATH, A. Neutestamentliche Zeitgeschichte. 3. Thl. Die Zeit der Märtyrer und das nachapostolische Zeitalter. 2. Abth. Heidelberg: Bassermann. 2 Thl. 14 Ngr.

History.

- GABRIEL, L'Abbé. Louis XVI., le Marquis de Bouillé, et Varennes. Paris: Gheio. 5 fr.
GALITZIN, N. S. Allgemeine Kriegsgeschichte d. Alterthums. 2. Bd. Cassel: Kay.
MAURER, K. Island von seiner ersten Entdeckung bis zum Untergange d. Freistaats. München: Kaiser. 3⁴ Thl.
MAYER, M. v. Die Püspetwahl Innocenz XIII. Wien: Brannmüller.

Physical Science.

- ALTUM, B. Forstzoologie. 3. Bd. Insecten. 1. Abth. Berlin: Springer. 2⁴ Thl.
HANDELSMANN, H. Vorgeschichtliche Steinwerkzeuge in Schleswig-Holstein. 3. Hft. Kiel: Von Maack. 12 Ngr.
HENYCH, Die Entwicklungsgeschichte u. Construction sämtlicher Hinterladergewehre der europäischen Staaten u. Nordamerikas. Nr. 3 und 4. Leipzig: Luckhardt. 3⁴ Thl.
SHERMS ED-DIN ABOT ABDALLAH MOHAMMED, Mannel de la Cosmographie du Moyen-Age. Traduit par A. F. Mehren. Leipzig: Brockhaus. 3⁴ Thl.
STUDIUM intorno ai diametri solari del P. Paolo Rosa della Compagnia di Gesu. Roma: Befani.
ZETZSCHE, K. E. Kurzer Abriss der Geschichte der elektrischen Telegraphie. Berlin: Springer. 1 Thl.

Philology.

- BEZZENBERGER, A. Ueber die A-Reihe der gotischen Sprache. Göttingen: Peppmüller. 3 Thl.
SACUT, M. Jesod Olam, das älteste bekannte dramatische Gedicht in hebräischer Sprache. Hrg. v. A. Berliner. Berlin: Benizian. 3 Thl.
TALMUD hierosolymitanum. Ordo Scrim. Ed. Z. Frankel. Vol. I. Wien: Winter. 2 Thl.

CORRESPONDENCE.

THE PHOENICIANS IN BRAZIL.

Strassburg: Aug. 20, 1874.

In No. 110 of this journal (June 13, 1874), I took occasion to express my conviction—founded on philological grounds—that the Inscription contained in the *Novo Mundo* of April 23, 1874, and given as the fac-simile of the Phoenician original, was a forgery. Since then Professor Schlottmann, in the *Jenae Literatur Zeitung*, July 25, 1874, has, independently—but on the same grounds as those which I assumed—given expression to his doubts of its genuineness. In the meanwhile, however, Professor Jacob Prag had undertaken, in Nos. 115 and 119 of the *ACADEMY*, to defend the character of the inscription, and at the same time to correct the errors which he assumes me to have made in my objections. In regard to the latter point, however, Professor Prag has allowed himself to argue on entirely false premises, since he proposes to instruct me as to Hebrew forms, while the matter under discussion refers solely to Phoenician. There can hardly be a doubt but that the author of that inscription intended to give us a Phoenician text, instead of which, however, he has presented us with a mixture of Hebrew and Chaldaic. It is not, therefore, very pertinent or logical to meet my statements as to how certain things should be expressed in Phoenician—statements made on the authority of genuine Phoenician texts—by the assertion, that in Hebrew they would be different.

I am bound to confess that I erred in accusing the compiler of the inscription of having confounded the first and third persons of the verb; but in regard to other points, I scarcely expressed myself sufficiently strongly, and I would therefore subjoin the following notes to my former objections:—

In the first place, it is quite obvious from the *עלינים ועלינות*, at lines 2, 3, 8, that the author had not reached our present stand-point of Phoenician scholarship. Gesenius in his *Monumenta* (p. 357-368) may not unreasonably have assumed that these were the Phoenician equivalents for the Plautinian ALONIM VALONUTH (in the Latin Parallel text: "Dii, Deaeque"), but since the discovery at Sidon, on January 19, 1855, of the sarcophagus of the King Eshmunazar, it would be hopeless to expect that such a hypothesis could be any longer applied with impunity in the fabrication of a Phoenician inscription; for on that king's monument stood in full and unabbreviated letters אלונים, alonim = Gods, while there was no trace of עלינים *elyonim*, with *scriptio plena* in the bargain.

It was undoubtedly an evidence of the great caution of the compiler that he did not give the irregularly-formed plural of the Hebrew אֵשׁ, viz., אֵשִׁים; but then, on the other hand, it was clearly superfluous to substitute for it the poetical

Hebrew מֵשֶׁת. He might have taken the genuine Phoenician plural of אֵשׁ, viz., דֵּשִׁים, which occurs twice, and to this I wished to draw attention by my short quotation "see Carthag., No. 195."

Professor Prag seems to be wholly unaware of the large number of Carthaginian inscriptions extant. From my own knowledge I am able to indicate 237 which have already been printed, and 120 which will speedily be made public. Of these, without counting those scattered about in pamphlets, 9 occur in Gesenius, *Monumenta*, 90 in the Carthaginian Inscriptions of the British Museum, 59 in Maltzan's *Reise in der Regentschaft Tunis und Tripolis*, tom. 1; and about 50 in my *Punische Steine*, in the *Mémoires de l'Académie Impér. des Sciences de St. Pétersbourg* (vii. sér. tome xvii., no. 3). The last-named work contains Carthag. no. 105, in which occurs the following passage:

עשרת האשם אש אל המקדשם "Decemviri qui templis praepositi."

The plural of אֵשׁ, appears again in not yet edited inscription which I propose shortly to publish as לֵאשִׁים (in the year . . . after the era) of the people of Kitium.

The irregularity in the construction of the numerals in Genesis, chap. vii. v. 13, which, moreover, is explained by בנין which follows it, is so unique in its character, that Professor Prag would probably be the first to condemn its use as an awkward and inelegant form in any Hebrew composition. For the present, at all events, I feel I may safely characterise such licences as sins against genuine Phoenician, and that with the same right with which we claim *schisma* as a neuter, although the Emperor Sigismund used it at the Council of Constance with "obstinate ignorance" in the feminine gender.

A genuine native of Sidon would probably have written שִׁשָּׁה עֶשְׂרִים (or עֶשְׂרִים שִׁשָּׁה) (see *Sidon*, I. i.) instead of שִׁשָּׁה עֶשְׂרִים. At line 5 the use of נִידָה as a verb for the Phoenician נִיִּן demands some justification, particularly as a לִ"ה verb, which is not known in Phoenician, where its only representative is לִ"ה.

DR. JULIUS EUTING.

POSTHUMUS IN "CYMBELINE"—A CORRECTION.

3 St. George's Square, N.W.: Sept. 2, 1874.

In the current number of *Macmillan's Magazine*, p. 415, col. 1, is a curious instance of Mr. Fleay's "incautious" statements. He says that among the "striking peculiarities" of act iv. sc. 2 of *Cymbeline*, one "is almost decisive in itself for a separate date" for this scene, namely, that "in this scene in *Cymbeline*, Posthumus (proparoxyton) is the pronunciation adopted:—

"'Struck the maintop. O Posthumus! Alas.'"

In every other scene it is Posthúmus (paroxyton). On turning to the play to verify these two statements, I found (1) that only twelve lines before the line quoted by Mr. Fleay, the name was pronounced Posthúmus, and so accented by Dyce.

A headless man—l. The garments of Posthúmus (to make it "Posthúmus" would turn the line to prose). Compare I. i., "That lock | up your | restraint |— For you | Posthúmus"—and V. v., "By being worse | than they. | I am | Posthúmus." Also (2) in act iii. sc. 4, "Posthúmus" occurred again: "The residence | of Posthúmus,—so nigh | at least" a line of six measures; though, if you want to make it fit a theory, you can, by squeezing out the i of "residence," and making -mus an extra syllable before the pause, turn the line into a five-measure one, and put the stress on u, Posthúmus. At any rate, one of Mr. Fleay's statements is wrong, if not both; and his "almost decisive" test for a separate date for this scene of *Cymbeline* altogether fails; the keystone of his criticism of the play falls in.

F. J. FURNIVALL.

SCIENCE.

MEETING OF THE BRITISH ASSOCIATION
AT BELFAST.ADDRESS TO THE DEPARTMENT OF ZOOLOGY AND
BOTANY, BY DR. HOOKER, C.B., D.C.L., PRES.
ROYAL SOCIETY.

(Continued from page 247.)

THE superficial teleology of the last century was easily satisfied, without looking far for explanations, but it is just worth while pausing for a moment to observe that, although Linnaeus had no materials for making any real investigation as to the purpose of the pitchers of *Sarracenias*, he very sagaciously anticipated the modern views as to their affinities. They are now regarded as very near allies of water-lilies—precisely the position which Linnaeus assigned to them in his fragmentary attempt at a true natural classification. And besides this, he also suggested the analogy which, improbable as it may seem at first sight, has been worked out in detail by Baillon (in apparent ignorance of Linnaeus' writings) between the leaves of *Sarracenia* and water-lilies.

Linnaeus seems to have supposed that *Sarracenia* was originally aquatic in its habits, that it had *Nymphaea*-like leaves, and that when it took to a terrestrial life its leaves became hollowed out, to contain the water in which they could no longer float—in fact, he showed himself to be an evolutionist of the true Darwinian type.

Catesby's suggestion was a very infelicitous one. The insects which visit these plants may find in them a retreat, but it is one from which they never return. Linnaeus's correspondent Collinson remarked in one of his letters, that "many poor insects lose their lives by being drowned in these cisterns of water;" but William Bartram, the son of the botanist, seems to have been the first to have put on record at the end of the last century, the fact that *Sarracenia*s catch insects and put them to death, in the wholesale way that they do.

Before stopping to consider how this is actually achieved, I will carry the history a little further.

In the two species in which the mouth is unprotected by the lid it could not be doubted that a part, at any rate, of the contained fluid, was supplied by rain. But in *Sarracenia variolaris*, in which the lid closes over the mouth, so that rain cannot readily enter it, there is no doubt that a fluid is secreted at the bottom of the pitchers, which probably has a digestive function. William Bartram, in the preface to his travels in 1791, described this fluid, but he was mistaken in supposing that it acted as a lure. There is a sugary secretion which attracts insects, but this is only found at the upper part of the tube. Bartram must be credited with the suggestion, which he, however, only put forward doubtfully, that the insects were dissolved in the fluid, and then became available for the alimentation of the plants.

Sir J. E. Smith, who published a figure and description of *Sarracenia variolaris* noticed that it secreted fluid, but was content to suppose that it was merely the gaseous products of the decomposition of insects that subserved the processes of vegetation. In 1829, however, thirty years after Bartram's book, Burnett wrote a paper containing a good many original ideas expressed in a somewhat quaint fashion, in which he very strongly insisted on the existence of a true digestive process in the case of *Sarracenia*, analogous to that which takes place in the stomach of an animal.

Our knowledge of the habits of *Sarracenia variolaris* is now pretty complete, owing to the observations of two South Carolina physicians. One, Dr. M'Bride, made his observations half a century ago, but they had, till quite recently, completely fallen into oblivion. He devoted himself to the task of ascertaining why it was that *Sarracenia variolaris* was visited by flies, and how it was that it captured them. This is what he ascertained:—

"The cause which attracts flies is evidently a viscid substance, resembling honey, secreted by or exuding from the internal surface of the tube. From the margin, where it commences, it does not extend lower than one-fourth of an inch. The falling of the insect as soon as it enters the tube, is wholly attributable to the downward or inverted position of the hairs of the internal surface of the leaf. At the bottom of a tube split open, the hairs are plainly discernible, pointing downwards; as the eye ranges upward they gradually become shorter and attenuated, till at or just below the surface covered by the bait they are no longer perceptible to the naked eye, nor to the most delicate touch. It is here that the fly cannot take a hold sufficiently strong to support itself, but falls."

Dr. Mellichamp, who is now resident in the district in which Dr. M'Bride made his observations, has added a good many particulars to our knowledge. He first investigated the fluid which is secreted at the bottom of the tubes. He satisfied himself that it was really secreted, and describes it as mucilaginous, but leaving in the mouth a peculiar astringency. He compared the action of this fluid with that of distilled water on pieces of fresh venison, and found that after fifteen hours the fluid had produced most change, and also most smell; he therefore concluded that as the leaves when stuffed with insects become most disgusting in odour, we have to do, not with a true digestion, but with an accelerated decomposition. Although he did not attribute any true digestive power to the fluid secreted by the pitchers, he found that it had a remarkable anaesthetic effect upon flies immersed in it. He remarked that "a fly when thrown into water is very apt to escape, as the fluid seems to run from its wings," but it never escaped from the *Sarracenia* secretion. About half a minute after being thrown in, the fly became to all appearance dead, though if removed, it gradually recovered in from half an hour to an hour.

According to Dr. Mellichamp, the sugary lure discovered by Dr. M'Bride, at the mouth of the pitchers, is not found on either the young ones of one season, or the older ones of the previous year. He found, however, that about May it could be detected without difficulty, and more wonderful still, that there is a honey-baited pathway leading directly from the ground to the mouth, along the broad wing of the pitcher, up which insects are led to their destruction.

From these narratives it is evident that there are two very different types of pitcher in *Sarracenia*, and an examination of the species shows that there must probably be three. These may be primarily classified into those with the mouth open and lid erect, and which consequently receive the rain water in more or less abundance; and those with the mouth closed by the lid, into which rain can hardly, if at all, find ingress.

To the first of these belongs the well-known *S. purpurea*, with inclined pitchers, and a lid so disposed as to direct all the rain that falls upon it also into the pitcher; also *S. flava*, *rubra*, and *Drummondii*, all with erect pitchers and vertical lids. Of these three the lid in a young state arches over the mouth, and in an old state stands nearly erect, and has the sides so reflected that the rain which falls on its upper surface is guided down the outside of the back of the pitcher, as if to prevent the flooding of the latter.

To the second group belong *S. psittacina* and *S. variolaris*.

The tissues of the internal surfaces of the pitchers are singularly beautiful. They have been described in one species only, the *S. purpurea*, by August Vogt; but from this all the other species which I have examined differ materially. Beginning from the upper part of the pitcher, there are four surfaces, characterised by different tissues, which I shall name and define as follow:—

1. An attractive surface, occupying the inner

surface of the lid, which is covered with an epidermis, stomata, and (in common with the mouth of the pitcher) with minute honey-secreting glands; it is further often more highly coloured than any other part of the pitcher, in order to attract insects to the honey.

2. A conducting surface, which is opaque, formed of glassy cells, which are produced into deflexed, short, conical spinous processes. These processes, overlapping like the tiles of a house, form a surface down which an insect slips, and afford no foothold to an insect attempting to crawl up again.

3. A glandular surface (seen in *S. purpurea*), which occupies a considerable portion of the cavity of the pitcher below the conducting surface. It is formed of a layer of epidermis, with sinuous cells, and is studded with glands; and being smooth and polished, this too affords no foothold for escaping insects.

4. A detentive surface, which occupies the lower part of the pitcher, in some cases for nearly its whole length. It possesses no cuticle, and is studded with deflexed stars, rigid, glass-like, needle-formed, striated hairs, which further converge towards the axis of the diminishing cavity; so that an insect, if once amongst them, is effectually detained, and its struggles have no other result than to wedge it lower and more firmly in the pitcher.

Now, it is a very curious thing, that in *S. purpurea*, which has an open pitcher, so formed as to receive and retain a maximum of rain, no honey secretion has hitherto been found, nor has any water been seen to be secreted in the pitcher; it is further the only species in which (as stated above) I have found a special glandular surface, and in which no glands occur on the detentive surface. This concurrence of circumstances suggests the possibility of this plant either having no proper secretion of its own, or only giving it off after the pitcher has been filled with rain water.

In *S. flava*, which has open-mouthed pitchers and no special glandular surface, I find glands in the upper portion of the detentive surface, amongst the hairs, but not in the middle or lower part of the same surface. It is proved that *S. flava* secretes fluid, but under what precise conditions I am not aware. I have found none but what may have been accidentally introduced in the few cultivated specimens which I have examined, either in the full-grown state or in the half-grown, when the lid arches over the pitcher. I find the honey in these as described by the American observers, and honey-secreting glands on the edge of the wing of the pitcher, together with similar glands on the outer surface of the pitcher, as seen by Vogt in *S. purpurea*.

Of the pitchers with closed mouths, I have examined those of *S. variolaris* only, whose tissues closely resemble those of *S. flava*. That it secretes a fluid noxious to insects there is no doubt, though in the specimens I examined I found none.

There is obviously thus much still to be learned with regard to *Sarracenia*, and I hope that American botanists will apply themselves to this task. It is not probable that three pitchers so differently constructed as those of *S. flava*, *purpurea*, and *variolaris*, and presenting such differences in their tissues, should act similarly. The fact that insects normally decompose in the fluid of all, would suggest the probability that they all feed on the products of decomposition; but as yet we are absolutely ignorant whether the glands within the pitchers are secretive or absorptive, or both; if secretive, whether they secrete water or a solvent; and if absorptive, whether they absorb animal matter or the products of decomposition.

It is quite likely, that just as the saccharine exudation only makes its appearance during one particular period in the life of the pitcher, so the digestive functions may also be only of short duration. We should be prepared for this from the case of the *Dionaea*, the leaves of which cease

after a time to be fit for absorption, and become less sensitive. It is quite certain that the insects which go on accumulating in the pitchers of *Sarracenia* must be far in excess of its needs for any legitimate process of digestion. They decompose; and various insects, too wary to be entrapped themselves, seem habitually to drop their eggs into the open mouth of the pitchers, to take advantage of the accumulation of food. The old pitchers are consequently found to contain living larvae and maggots, a sufficient proof that the original properties of the fluid which they secreted must have become exhausted; and Barton tells us that various insectivorous birds alit open the pitchers with their beaks to get at the contents. This was probably the origin of Linnaeus' statement that the pitchers supplied birds with water.

The pitchers finally decay, and part, at any rate, of their contents must supply some nutriment to the plant by fertilising the ground in which it grows.

Darlingtonia.—I cannot take leave of *Sarracenia* without a short notice of its near ally, *Darlingtonia*, a still more wonderful plant, an outlier of *Sarracenia* in geographical distribution, being found at an elevation of 5,000 feet on the Sierra Nevada of California, far west of any locality inhabited by *Sarracenia*. It has pitchers of two forms; one, peculiar to the infant state of the plant, consists of narrow, somewhat twisted, trumpet-shaped tubes, with very oblique open mouths, the dorsal lip of which is drawn out into a long, slender, arching, scarlet hood, that hardly closes the mouth. The slight twist in the tube causes these mouths to point in various directions, and they entrap very small insects only. Before arriving at a state of maturity the plant bears much larger, suberect pitchers, also twisted, with the lip produced into a large inflated hood, that completely arches over a very small entrance to the cavity of the pitcher. A singular orange-red flabby two-lobed organ hangs from the end of the hood, right in front of the entrance, which, as I was informed last week by letter from Professor Asa Gray, is smeared with honey on its inner surface. These pitchers are crammed with large insects, especially moths, which decompose in them, and result in a putrid mass. I have no information of water being found in its pitchers in its native country, but have myself found a slight acid secretion in the young states of both forms of pitcher.

The tissues of the inner surfaces of the pitchers of both the young and old plant I find to be very similar to those of *Sarracenia variolaris* and *flava*.

Looking at a flowering specimen of *Darlingtonia*, I was struck with a remarkable analogy between the arrangement and colouring of the parts of the leaf and of the flower. The petals are of the same colour as the flap of the pitcher, and between each pair of petals is a hole (formed by a notch in the opposed margins of each) leading to the stamens and stigma. Turning to the pitcher, the relation of its flap to its entrance is somewhat similar. Now, we know that coloured petals are specially attractive organs, and that the object of their colour is to bring insects to feed on the pollen or nectar, and in this case by means of the hole to fertilise the flower; and that the object of the flap and its sugar is also to attract insects, but with a very different result, cannot be doubted. It is hence conceivable that this marvellous plant lures insects to its flowers for one object, and feeds them while it uses them to fertilise itself, and that, this accomplished, some of its benefactors are thereafter lured to its pitchers for the sake of feeding itself!

But to return from mere conjecture to scientific earnest, I cannot dismiss *Darlingtonia* without pointing out to you what appears to me a most curious point in its history; which is, that the change from the slender, tubular, open-mouthed, to the inflated close-mouthed pitchers, is, in all the specimens which I have examined, absolutely

sudden in the individual plant. I find no pitchers in an intermediate stage of development. This, a matter of no little significance in itself, derives additional interest from the fact, that the young pitchers to a certain degree represent those of the *Sarracenia*s with open mouths and erect lids; and the old pitchers those of the *Sarracenia*s with closed mouths and globose lids. The combination of representative characters in an outlying species of a small order, cannot but be regarded as a marvellously significant fact in the view of those morphologists who hold the doctrine of evolution.

Nepenthes.—The genus *Nepenthes* consists of upwards of thirty species of climbing half-shrubby plants, natives of the hotter parts of the Asiatic Archipelago from Borneo to Ceylon, with a few outlying species in New Caledonia, in tropical Australia, and in the Seychelle Islands on the African coast. Its pitchers are abundantly produced, especially during the younger state of the plants. They present very considerable modifications of form and external structure, and vary greatly in size, from little more than an inch to almost a foot in length; one species, indeed, which I have here from the mountains of Borneo, has pitchers which, including the lid, measure a foot and a half, and its capacious bowl is large enough to drown a small animal or bird.

The structure of the pitcher of *Nepenthes* is less complicated on the whole than that of *Sarracenia*, though some of its tissues are much more highly specialised. The pitcher itself is here not a transformed leaf, as in *Sarracenia*, nor is it a transformed leaf-blade, like that of *Dionaea*, but an appendage of the leaf developed at its tip, and answers to a water-secreting gland that may be seen terminating the mid-rib of the leaf of certain plants. It is furnished with a stalk, often a very long one, which in the case of pitchers formed on leaves high up the stem has (before the full development of the pitcher) the power of twisting like a tendril round neighbouring objects, and thus aiding the plant in climbing, often to a great height in the forest.

In most species the pitchers are of two forms, one appertaining to the young, the other to the old state of the plant, the transition from one form to the other being gradual. Those of the young state are shorter and more inflated; they have broad fringed longitudinal wings on the outside, which are probably guides to lead insects to the mouth; the lid is smaller and more open, and the whole interior surface is covered with secreting glands. Being formed near the root of the plant, these pitchers often rest on the ground, and in species which do not form leaves near the root, they are sometimes suspended from stalks which may be fully a yard long, and which bring them to the ground. In the older state of the plant the pitchers are usually much longer, narrower, and less inflated, and are trumpet-shaped, or even conical; the wings also are narrower, less fringed, or almost absent. The lid is larger and slants over the mouth, and only the lower part of the pitcher is covered with secreting glands, the upper part presenting a tissue analogous to the conducting tissue of *Sarracenia*, but very different anatomically. The difference in structure of these two forms of pitcher, if considered in reference to their different positions on the plant, forces the conclusion on the mind, that the one form is intended for ground game, the other for winged game. In all cases the mouth of the pitcher is furnished with a thickened corrugated rim, which serves three purposes: it strengthens the mouth and keeps it distended; it secretes honey (at least in all the species I have examined under cultivation, for I do not find that any other observer has noticed the secretion of honey by *Nepenthes*) and it is in various species developed into a funnel-shaped tube that descends into the pitcher, and prevents the escape of insects, or into a row of incurved hooks, that are in some cases strong enough to retain a small bird, should it, when in search of water or

insects, thrust its body beyond a certain length into the pitcher.

In the interior of the pitcher of *Nepenthes* there are three principal surfaces: an *attractive*, *conductive*, and a *secretive* surface; the *detentive* surface of *Sarracenia* being represented by the fluid secretion, which is here invariably present at all stages of growth of the pitcher.

The attractive surfaces of *Nepenthes* are two, those, namely, of the rim of the pitcher, and of the under surface of the lid, which is provided in almost every species with honey-secreting glands, often in great abundance. These glands consist of spherical masses of cells, each embedded in a cavity of the tissue of the lid, and encircled by a guard-ring of glass-like cellular tissue. As in *Sarracenia*, the lid and mouth of the pitcher are more highly coloured than any other part, with the view of attracting insects to their honey. It is a singular fact that the only species known to me that wants these honey glands on the lid is the *N. ampullaria*, whose lid, unlike that of the other species, is thrown back horizontally. The secretion of honey on a lid so placed would tend to lure insects away from the pitcher instead of into it.

From the mouth to a variable distance down the pitcher is an opaque glaucous surface, precisely resembling in colour and appearance the conductive surface of the *Sarracenia*, and like it affording no foot-hold to insects, but otherwise wholly different; it is formed of a fine network of cells, covered with a glass-like cuticle, and studded with minute reniform transverse excrescences.

The rest of the pitcher is entirely occupied with the secretive surface, which consists of a cellular floor crowded with spherical glands in inconceivable numbers. Each gland precisely resembles a honey-gland of the lid, and is contained in a pocket of the same nature, but semicircular, with the mouth downwards, so that the secretive fluid all falls to the bottom of the pitcher. In the *Nepenthes Rafflesiana* three thousand of the glands occur on a square inch of the inner surface of the pitcher, and upwards of a million in an ordinary sized pitcher. I have ascertained that, as was indeed to be expected, they secrete the fluid which is contained in the bottom of the pitcher before this opens, and that the fluid is always acid.

The fluid, though invariably present, occupies a comparatively small portion of the glandular surface of the pitcher, and is collected before the lid opens. When the fluid is emptied out of a fully formed pitcher that has not received animal matter, it forms again, but in comparatively very small quantities; and the formation goes on for many days, and to some extent even after the pitcher has been removed from the plant. I do not find that placing inorganic substances in the fluid causes an increased secretion, but I have twice observed a considerable increase of fluid in pitchers after putting animal matter in the fluid.

To test the digestive powers of *Nepenthes*, I have closely followed Mr. Darwin's treatment of *Dionaea* and *Drosera*, employing white of egg, raw meat, fibrine and cartilage. In all cases the action is most evident, in some surprising. After twenty-four hours' immersion the edges of the cubes of white of egg are eaten away and the surfaces gelatinised. Fragments of meat are rapidly reduced; and pieces of fibrine weighing several grains dissolve and totally disappear in two or three days. With cartilage the action is most remarkable of all; lumps of this weighing eight and ten grains are half gelatinised in twenty-four hours, and in three days the whole mass is greatly diminished, and reduced to a clear transparent jelly. After drying some cartilage in the open air for a week, and placing it in an unopened but fully-formed pitcher of *N. Rafflesiana*, it was acted upon similarly and very little more slowly.

That this process, which is comparable to digestion, is not wholly due to the fluid first secreted by the glands, appears to me most probable; for I

find that very little action takes place in any of the substances placed in the fluid drawn from pitchers, and put in glass tubes; nor has any followed after six days' immersion of cartilage or fibrine in pitchers of *N. ampullaria* placed in a cold room, whilst on transferring the cartilage from the pitcher of *N. ampullaria* in the cold room to one of *Rafflesiana* in the stove, it was immediately acted upon. Comparing the action of fibrine, meat, and cartilage placed in tubes of *Nepenthes* fluid, with other in tubes of distilled water, I observed that their disintegration is three times more rapid in the fluid; but this disintegration is wholly different from that effected by immersion in the fluid of the pitcher of a living plant.

In the case of small portions of meat, $\frac{1}{4}$ —2 grains, all seems to be absorbed; but with 8—10 grains of cartilage it is not so, a certain portion disappears, the rest remains as a transparent jelly, and finally becomes putrid, but not till after many days. Insects appear to be acted upon somewhat differently, for after several days' immersion of a large piece of cartilage, I found that a good sized cockroach which had followed the cartilage and was drowned for his temerity, in two days became putrid. On removing the cockroach the cartilage remained inodorous for many days. In this case no doubt the antiseptic fluid had permeated the tissue of the cartilage, whilst enough did not remain to penetrate the chitinous hard covering of the insect, which consequently decomposed.

In the case of cartilage placed in fluid taken from the pitcher, it becomes putrid, but not so soon as if placed in distilled water.

From the above observations it would appear probable that a substance acting as pepsine is given off from the inner wall of the pitcher, but chiefly after placing animal matter in the acid fluid; but whether this active agent flows from the glands, or from the cellular tissue in which they are embedded, I have no evidence to show.

I have here not alluded to the action of these animal matters in the cells of the glands, which is, as has been observed by Mr. Darwin, in *Drosera*, to bring about remarkable changes in their protoplasm, ending in their discolouration. Not only is there aggregation of the protoplasm in the gland-cells, but the walls of the cells themselves become discoloured, and the glandular surface of the pitcher that at first was of a uniform green, becomes covered with innumerable brown specks (which are the discoloured glands). After the function of the glands is exhausted, the fluid evaporates, and the pitcher slowly withers.

At this stage I am obliged to leave this interesting investigation. That *Nepenthes* possesses a true digestive process such as has been proved in the case of *Drosera*, *Dionaea*, and *Pinguicula*, cannot be doubted. This process, however, takes place in a fluid which deprives us of the power of following it further by direct observation. We cannot here witness the pouring out of the digestive fluid, we must assume its presence and nature from the behaviour of the animal matter placed in the fluid in the pitcher. From certain characters of the cellular tissues of the interior walls of the pitcher, I am disposed to think that it takes little part in the processes of either digestion or assimilation, and that these, as well as the pouring out of the acid fluid, are all functions of the glands.

In what I have said, I have described the most striking instances of plants which seem to invert the order of Nature, and to draw their nutriment—in part at least—from the animal kingdom, which it is often held to be the function of the vegetable kingdom to sustain.

I might have added some additional cases to those I have already dwelt upon. Probably, too, there are others still unknown to science, or whose habits have not yet been detected. Delpino, for example, has suggested that a plant, first described by myself in the Botany of the Antarctic voyage, *Caltha dionaeifolia*, is so analogous in the structure of its leaves to *Dionaea*, that it is difficult to

resist the conviction that its structure also is adapted for the capture of small insects.

But the problem that forces itself upon our attention is, How does it come to pass that these singular aberrations from the otherwise uniform order of vegetable nutrition, make their appearance in remote parts of the vegetable kingdom—why are they not more frequent, and how were such extraordinary habits brought about or contracted? At first sight the perplexity is not diminished by considering—as we may do for a moment—the nature of ordinary vegetable nutrition. Vegetation, as we see it everywhere, is distinguished by its green colour, which we know depends on a peculiar substance called chlorophyll: a substance which has the singular property of attracting to itself the carbonic acid gas which is present in minute quantities in the atmosphere, of partly decomposing it, so far as to set free a portion of its oxygen, and of recombining it with the elements of water to form those substances, such as starch, cellulose, and sugar, out of which the framework of the plant is constructed.

But, beside these processes, the roots take up certain matters from the soil. Nitrogen forms nearly four-fifths of the air we breathe, yet plants can possess themselves of none of it in the free uncombined state. They withdraw nitrates and salts of ammonia in minute quantities from the ground, and from these they build up with starch, or some analogous material, albuminoids or protein compounds, necessary for the sustentation and growth of protoplasm.

At first sight nothing can be more unlike this than a *Dionaea* or a *Nepenthes* capturing insects, pouring out a digestive fluid upon them, and absorbing the albuminoids of the animal, in a form probably directly capable of appropriation for their own nutrition. Yet there is something not altogether wanting in analogy in the case of the most regularly constituted plants. The seed of the castor-oil plant contains, besides the embryo seedling, a mass of cellular tissue or endosperm filled with highly nutritive substances. The seedling lies between masses of this, and is in contact with it—and as the warmth and moisture of germination set up changes which bring about the liquefaction of the contents of the endosperm and the embryo absorbs them, it grows in so doing, and at last having taken up all it can from the exhausted endosperm, develops chlorophyll in its cotyledons under the influence of light, and relies on its own resources.

A large number of plants, then, in their young condition, borrow their nutritive compounds ready prepared, and this is in effect what carnivorous plants do later in life.

That this is not merely a fanciful way of regarding the relation of the embryo to the endosperm, is proved by the ingenious experiments of Van Tieghem, who has succeeded in substituting for the real, an artificial endosperm, consisting of appropriate nutritive matters. Except that the embryo has its food given to it in a manner which needs no digestion—a proper concession to its infantile state—the analogy here with the mature plants which feed on organic food seems to be complete.

But we are beginning also to recognise the fact that there are a large number of flowering-plants that pass through their lives without ever doing a stroke of the work that green plants do. These have been called Saprophytes. *Monotropa*, the curious bird's-nest orchis (*Neottia Nidus-avis*), *Epipogium*, and *Corallorhiza* are instances of British plants which nourish themselves by absorbing the partially decomposed materials of other plants, in the shady or marshy places which they inhabit. They reconstitute these products of organic decomposition, and build them up once more into an organism. It is curious to notice, however, that the tissues of *Neottia* still contain chlorophyll in a nascent though useless state, and that if a plant of it be immersed in boiling water, the characteristic green colour reveals itself.

Epipogium and *Corallorhiza* have lost their proper absorbent organs; they are destitute of roots, and take in their food by the surfaces of their underground stem structures.

The absolute difference between plants which absorb and nourish themselves by the products of the decomposition of plant-structures, and those which make a similar use of animal structures is not very great. We may imagine that plants accidentally permitted the accumulation of insects in some parts of their structure, and the practice became developed because it was found to be useful. It was long ago suggested that the receptacle formed by the connate leaves of *Dipsacus* might be an incipient organ of this kind; and though no insectivorous habit has ever been brought home to that plant, the theory is not improbable.

Linnaeus, and more lately Baillon, have shown how a pitcher of *Sarracenia* may be regarded as a modification of a leaf of the *Nymphaea* type. We may imagine such a leaf first becoming hollow, and allowing *débris* of different kinds to accumulate; these would decompose, and a solution would be produced, some of the constituents of which would diffuse themselves into the subjacent plant tissues. This is in point of fact absorption, and we may suppose that in the first instance—as perhaps still in *Sarracenia purpurea*—the matter absorbed was merely the saline nutritive products of decomposition, such as ammoniacal salts. The act of digestion—that process by which soluble food is reduced without decomposition to a soluble form fitted for absorption—was doubtless subsequently required.

The secretion, however, of fluids by plants is not an unusual phenomenon. In many Aroids a small gland at the apex of the leaves secretes fluid, often in considerable quantities, and the pitcher of *Nepenthes* is, as I have shown elsewhere, only a gland of this kind enormously developed. May not, therefore, the wonderful pitchers and carnivorous habit of *Nepenthes* have both originated by natural selection out of one such honey-secreting gland as we still find developed near that part of the pitcher which represents the tip of the leaf? We may suppose insects to have been entangled in the viscid secretion of such a gland, and to have perished there, being acted upon by those acid secretions that abound in these and most other plants. The subsequent differentiation of the secreting organs of the pitcher into aqueous, saccharine, and acid, would follow *pari passu* with the evolution of the pitcher itself, according to those mysterious laws which result in the correlation of organs and functions throughout the kingdom of Nature, and which, in my apprehension, transcend in wonder and interest those of evolution and the origin of species.

Delpino has recorded the fact that the spathe of *Alocasia* secretes an acid fluid which destroys the slugs that visit it, and which he believes subserves its fertilisation. Here any process of nutrition can only be purely secondary. But the fluids of plants are in the great majority of cases acid, and, when exuded, would be almost certain to bring about some solution in substances with which they came in contact. Thus the acid secretions of roots were found by Sachs to corrode polished marble surfaces with which they came in contact, and thus to favour the absorption of mineral matter.

The solution of albuminoid substances requires, however, besides a suitable acid, the presence of some other albuminoid substance analogous to pepsine. Such substances, however, are frequent in plants. Besides the well-known diastase, which converts the starch of malt into sugar, there are other instances in the synaptase which determines the formation of hydrocyanic acid from emulsions, and the myrosin which similarly induces the formation of oil of mustard. We need not wonder, then, if the fluid secreted by a plant should prove to possess the ingredients necessary for the digestion of insoluble animal matters.

These remarks will, I hope, lead you to see, that though the processes of plant nutrition are in general extremely different from those of animal nutrition, and involve very simple compounds, yet that the protoplasm of plants is not absolutely prohibited from availing itself of food, such as that by which the protoplasm of animals is nourished; under which point of view these phenomena of carnivorous plants will find their place, as one more link in the continuity of nature.

SECTION E.—Saturday, August 22.

Dr. W. B. Carpenter gave a summary of the results of the *Challenger* researches into the physical conditions of the deep sea. He said it would be interesting for the audience to know that the idea of such an expedition originated in Belfast. In 1868 he was over on a visit to Dr. Wyville Thomson, studying some peculiar specimens of crinoids. It was the time of the expected Fenian invasion, and Dr. Thomson suggested that the use of one of the gunboats should be obtained for making deep sea soundings. The subject was represented to the Government, and the use of the *Lightning* was granted. Explorations were carried on between the Faroe Islands and the North of Scotland, and the remarkable discovery made that the water at different depths was of different temperatures—the old theory being that the sea was of a uniform temperature of 39°. In the following year, on the representation of the Royal Society, the *Porcupine* was placed at the disposal of Dr. Carpenter, Dr. Gwyn Jeffreys, and Dr. Thomson, and the results obtained in the preceding year were verified by soundings taken with the improved thermometers round the Faroe Islands and off the coasts of Spain and Portugal. A succession of soundings gave rise to the conclusion that in the channel off the Faroe Islands there were two distinct strata of water—a glacial stratum of about 300 fathoms in thickness, underlying another stratum of about the same thickness, one formed of cold polar water and the other of warm equatorial water. Then came the *Challenger* expedition, which made a temperature survey of the Atlantic between 38° N. lat. and 38° S. lat. Soundings were made at different stations and at different depths, and from the results Dr. Carpenter was led to the theory of a great ocean circulation, independent of wind or of movements similar to the Gulf Stream. By this circulation the temperature is equalised; the temperature of the equatorial water being reduced by the flow of polar water south, and that of the Arctic water raised by a flow of equatorial water north. The cause of the colder water sinking was that it was of greater salinity, and therefore, continuing to contract to freezing point, it had a tendency to sink. The soundings of the *Challenger* showed that the great under-stratum in the Atlantic was about 35°, and that the upper strata varied from 40° to 80°. Off Nova Scotia a strange phenomenon was noticed. It was found that between the Gulf Stream and the coast, and even under the Gulf Stream, there was a band of water below the normal latitude running southward, which is only to be referred to the definite movement of polar water towards the equator combined with the motion of the earth; for, as the north-moving warm upper stratum constantly tends towards the east, in virtue of the excess of easterly momentum which it brings with it from a portion of the globe whose rotary movement is more rapid, so the cold under-stratum, if moving southwards from a portion of the globe whose rotary motion is less rapid, will bring with it a deficiency of easterly momentum, or, in other words, will tend towards the east. The reduction in the salinity of the surface water at the Equator, as indicated by specific gravity, was brought out clearly by the expedition, and afforded a striking indication of the ascent of bottom water towards the surface, which, on the theory of the vertical circulation, will take place in the equatorial

region, where the two polar underflows meet, while the warm upper layer is being constantly drafted off towards either pole. The effect of the general oceanic circulation in moderating what would otherwise be the unbearable heat of the inter-tropical ocean was then pointed out. In the Red Sea, where there is no upward movement of glacial water, owing to the shallowness of the Straits of Babel Mandeb, the surface temperature is highest. In the equatorial mid-Atlantic it is seldom above 80°. On the other hand, the north-easterly flow of warm water greatly ameliorates the climate of North-western Europe. Dr. Carpenter controverted the theory that this amelioration is due to the Gulf Stream, and pointed out the difference of the climatic modifications in the Northern and Southern hemisphere. Between the Arctic basin and the Great Northern Ocean there was a comparatively limited passage in the channel between Greenland and Iceland, whilst between the Antarctic and the Great Southern Oceans there was an unrestricted communication. The effect of this is to bring a much larger body of polar water into the South Atlantic basin, so that the isotherm of 40° lies in every part of it much nearer the surface than it does in the North Atlantic.

The Mediterranean was found to differ very much from the Atlantic Ocean. The surface water in summer ranged from 73° to 80°, sinking at fifty fathoms to about 54°; whilst from 100 fathoms to the bottom there was a constant temperature of from 54° to 55°. In winter the temperature is uniform from the surface to the bottom, and Dr. Carpenter is of opinion that the uniform temperature of the Mediterranean corresponds with the lowest winter mean. As the sun gains in power the temperature of the superficial stratum is raised, but the summer heat cannot penetrate far downwards. The absence of thermal circulation in the deeper parts of this great basin is the necessary consequence of the uniformity of its temperature.

In conclusion, Dr. Carpenter alluded to the labours of Professor Lentz, of St. Petersburg, in connexion with oceanic thermal circulation, based on the observations made in the second voyage of Kotzebue during the years 1823–6, but with which he did not become acquainted until he had published the theory himself.

SECTION B.—Monday, August 24.

Mr. Jeremiah Head read a paper on "A Higher Education for Engineers." He commenced by referring to the intrinsic natural advantages of this country, and the dependence of British industry upon mineral products. He said that industrial manufactures would, in future, continue to expand or dwindle away in proportion to the enlightenment with which British engineers administered the natural resources committed to their charge. The paper was mainly devoted to the solving of the question of—"How far the quality of engineering education, as commonly met with in this country, is suited to the great and increasing claims made thereon?" The term of engineer, he said, was a very ambiguous one; but he regarded as the best engineer the man who was able, as various necessities arose, to utilise in the best and most economic manner the materials of the earth for the benefit of its inhabitants. One of the subjects with which he thought an engineer should be familiar in order to ensure success in all his undertakings, was a knowledge of the elements of which the earth was composed, and their several properties, which would involve a study of chemistry. Having acquired this knowledge, he who desired to *deserve* the name of an engineer must proceed to make himself acquainted with the various *moods* or conditions in which these substances may exist. This would plunge him into a study of physics, wherein were comprised the laws of motion, force, gravity, cohesion, and chemical attraction. Mechanics proper, which was divisible into statics and dynamics, was a department of physics. It further included the

consideration of the three states of matter—solid, liquid, and gaseous—and all the phenomena arising thereout. It had also appropriated all accurately ascertained knowledge concerning energy, potential and actual, and concerning vibratory motion, whether as manifested by sound, light, heat, or electricity. One of the principal branches of engineering in all countries was that appertaining to mines, and successful mining was impossible without a correct knowledge of geology, and its kindred science, mineralogy. A knowledge of physical geography was also essential in the design and construction of ocean steamships, in the laying of submarine cables, in arrangements for the supply of water to large populations, in drainage, in mountain railways, in sub-mountain and submarine tunnels; in docks, harbours, piers, and various other works. An engineer, to be a true and intelligent leader of industrial enterprise, must also have sound views in regard to economic science, in order to be able to solve the difficulties which were ever recurring between workmen and their employers. There were other studies without which success could not be commanded in any important sphere of usefulness, such as mathematics, accounts, commercial law, logic (comprising inductive and deductive reasoning), rhetoric, and accounts or book-keeping, upon which rested all sound financial and commercial operations. An engineer's operations, however gigantic, must always count as failures, unless they could be made commercially to pay. In this respect lay the main difference between Robert Stephenson and his rival, I. K. Brunel. The enterprises of the former always proved paying investments, while those of the latter were generally quite the reverse. Every engineer should also understand the general principles which underlie our legal and judicial system in order to conduct Public Works' Bills successfully through Parliamentary committees. The reason why an engineer should study rhetoric was not so much for the purpose of making speeches, as to be able to state what they had to say briefly, clearly, and forcibly, and if elegantly so much the better. There were other two departments which ought to be included in a higher education for engineers—physiology and professional morals. Though engineers were conversant with every corner of the universe, yet their knowledge was liable to become worthless unless they understood and recognised the nature and mode of operation of the human mind and body. Were all men physiologists we should certainly cease to hear of tables jumping up against ceilings, or spirits wafting hypochondriacs among the London chimney-pots, or inspired tambourines bumping their devotees about the head in darkened rooms. And (which is infinitely more important) we might hope eventually to see them become as really patient, honest, accurate seekers after light and truth, as they are now so often dogmatic and obstinate retailers of whatever notions they may happen to have imbibed from those among whom they may chance to have lived, and who have, perhaps, taken the same pains to cramp their minds as Chinese mandarins do to cramp their daughters' feet. The question might be asked, What connexion can possibly exist between engineering and *morals*? By "*morals*" he meant the science of distinguishing between that which is *right*, or compatible with life in a highly organised condition, and that which is *wrong*, or tending to the dissolution of society. The two most important moral questions affecting engineers at the present moment, were, first, the custom of giving and receiving gratuities, commissions, douceurs, presents, and whatever other names might be bestowed upon attempts to swerve the conduct of those in positions of trust from the strict path of honour and integrity; and secondly, the prevalent custom of unfairly decoying away workmen, or superior assistants, after time, trouble and expense have been incurred in training or adapting them to their positions. In conclusion, Mr.

Head said that in making the above suggestions he was not advocating any violent revolution or sweeping change. He did not wish to convey any other idea than that death alone should terminate education. He thought that if the programme he had suggested, especially if amplified, as might be done, would afford work for a lifetime. This should not be deemed discouraging; for, if only those who directed education could clearly foresee what the work of a particular life was destined to be, many a filip might be given in a helping direction, and many an erring tendency might easily be counteracted in boyhood, youth, and throughout manhood. He had observed that the Council of the Institution of Civil Engineers recommended contributors of papers to take as their model Smeaton's *History of the Building of the Eddystone Lighthouse*. He thought that there could not be a better type of what engineers should aim at being than that marvellous structure. Founded upon the solid rock, and the lowest courses of granite blocks dovetailed into the same, its form was such that a century of Atlantic storms had been unable to shake it. The lower part was solid, and so spread out towards the rock that the question arose, Where would it break if a sufficient storm did attack it? Hardly above, for that part was out of the reach of the waves. Hardly below, because the lower, the wider and the stronger it was down to the solid rock. So should the knowledge of engineers be: the lower, the deeper, and the more fundamental, should also be the wider, the more thorough, and the more absolutely accurate.

SECTION A.—Monday, August 24.

Mr. Robert H. Scott, M.A., F.R.S., in a paper on "The Importance of improved Methods of Registration of Wind on the Coast, with a Notice of an Anemometer designed by Mr. W. De La Rue, F.R.S., to furnish Telegraphic Information of the Occurrence of Strong Winds," said: It is hardly necessary to draw the attention of the Section to the fact that the configuration of the earth's surface exercises an overwhelming influence on the wind both as to its direction and force. Some statements and tables contained in a paper* of mine in the last number of the *Quarterly Journal of the Meteorological Society* abundantly prove this assertion; and it is, therefore, easy to see what an imperfect representation of the actual force of the wind at sea can be furnished by reports from a broken and mountainous coast, such as the Atlantic coasts of Ireland and Scotland, where the telegraphic stations are perforce situated in sheltered places, inasmuch as harbours are naturally found where there is as little exposure to wind as is possible.

In the practice of weather telegraphy and storm warnings, as the number of reports received per day from each station is strictly limited, from financial considerations, it is quite obvious that if the actual epoch of the commencement of a gale does not fall within the hours of attendance at the telegraphic office, and at the Meteorological Office, which practically only extend from 8 A.M. till 3 P.M., much time will be lost in sending news of the fact to London. If it commences at 6 P.M. at Valencia, we cannot hear of it in London till 9 A.M. next morning.

On the other hand, if the observer be living in a sheltered spot, such as Plymouth, Nairn, or Greencastle, we shall not get a true report of the gale at all, inasmuch as the observer will not have felt it himself. The first-named defect in our system can only be met by a considerably increased expenditure on the service, and that is not a scientific but an administrative question, with which the Government can alone deal. In

order to meet the second difficulty, Mr. De La Rue has kindly devised an instrumental arrangement by which the fact of any given force of wind having been reached at an exposed point (such as Rame Head for Plymouth, or Malin Head for Greencastle), can be at once conveyed to the reporter in his own office, or even to the central office in London. The instrument has been made by Messrs. Negretti and Zambra.

The following is the construction of the new signalling anemometer:—To the ordinary Robinson's anemometer spindle is affixed a toothed wheel, which is geared with another and larger toothed wheel fixed on a second vertical spindle, which carries a centrifugal governor. The governor spindle is made to rotate at one-half or one-third of the velocity of the anemometer spindle, in order that the rods carrying the governor balls may not have to be made inconveniently short. A provision is made for adjusting the length of the arms of the governor so that the different wind velocities may be indicated within certain limits.

The governor balls act in the well-known way, and expand when driven at a given rate, and the upward motion of these governor balls is used to raise a secondary wheel to bring into gear a third spindle, on which is fixed the armature of a magneto-electric apparatus, which, like Sir Charles Wheatstone's instruments, consists of a compound permanent magnet with four soft iron covers, two of which are mounted on the N. pole of the magnet, and two on the S. pole. These iron covers are surrounded with fine insulated copper wire, and on rotation of the armature give alternately + and - currents in rapid succession, according to the rate at which the armature is driven. These currents are conveyed inland to the observing station by insulated wires, and give warning by ringing an alarm as long as the anemometer cups are revolving at a velocity sufficient to raise the governor balls so as to bring the magneto-electrical apparatus into gear.

We see, therefore, that by adjusting the governor of the apparatus to indicate any required speed, a warning will at once be given when the wind reaches that speed, be it that of sixty, forty, or twenty miles an hour, as may be required.

All the attention which the instrument requires after the apparatus is fixed is to lead two insulated wires from the anemometer into the observing station, and to connect these wires to the two terminals on the alarm.

In order to enable the observer to communicate at once, and at as little expense as possible, to London, the fact of the velocity in question having been reached, the individual stations might be known by letters or symbols which might simply be telegraphed to London as an announcement that the alarm was acting at the station in question.

It is obvious that this plan is exceedingly simple, and there seems little reason why it should not be thoroughly efficacious, if only the registering portion of the apparatus can be properly protected from wilful damage by mischievous persons.

As usual, we are met by the question of cost, not only of the apparatus, but of the connecting wires, and last, though not least, of the transmission of the messages. To enable us to render our service more effective than it is, we must be supplied with the sinews of war. The 3,000*l.*, which is the very utmost we spend annually on telegraphy, including salaries, rent, and every item, is but small compared with the 50,000*l.*, entirely exclusive of salaries, with which the chief Signal Office of the United States is so munificently endowed.

SECTION F.—Monday, August 24.

Mrs. Wm. Grey read a paper on the Science of Education:—Education should be conducted in accordance with the laws, or, to use a less ambiguous word, with the order of nature, physical, mental, and social. We should hold him a fool

who trusted his farm, his gardens, or his racing stud to persons ignorant of the first principles of agriculture, gardening, or horse-breeding; yet we unhesitatingly trust our children, during the years when every faculty is most plastic, and their natures most sensitive to external influences, first to servants ignorant of everything but the routine prescribed by their masters, and then at a later, but not less critical age, to tutors and governesses, who may know Greek and Latin, French and German, but have never even thought of learning anything of the nature of the pupils they undertake to educate, or of the complex conditions of every kind which must influence them for good or evil. Every mother is credited with an instinctive knowledge of infant management, as if the wants of a child were as simple and as easily supplied by instinctive affection as those of the chick or the lamb, and it is adduced as the principal reason for denying to women any higher training than that of the average schoolroom that they are intended to be mothers, and therefore cannot want it! The whole progress of education is of the happy-go-lucky kind, governed by practical necessities, by customs, fashion, class habits and prejudices, by anything but a well-defined purpose, and a scientific method of attaining it. There can, of course, be no science of such an education as that. But in days when scientific conceptions are taking the place of unscientific ones in every department of human production, surely it is time that we should form some such conception of the progress which should result in the most valuable of all products—human beings developed to the full extent of their natural capacity, trained to understand their work in this world, and to do it. We can by the application of scientific methods arrive at this result—not with certainty, for the factors are too numerous, and their interaction too complicated, to admit of anything like complete certainty—but with, at least, that approximate certainty which we feel when a vessel goes to sea well built, well equipped, well manned, and well commanded, that she will reach her destined port. The human being we have to deal with has a threefold nature—physical, intellectual, and emotional—blended into one indivisible unity, yet subject to different and often conflicting sets of laws, and endowed with the power of volition, which makes him a responsible agent. Certain elements of his constitution are common to him with the whole human race; others are common to him and that division of the human race to which he belongs; others common only to his immediate line of descent; and others peculiar to himself, and forming that element of variety from a common type which constitutes his individuality. He is placed under external conditions, physical, mental, and social, which, like the elements of his constitution, may be classed under different degrees of generality, some being common to all human beings, some to all of his time and country and social position, and some peculiar to himself, and forming his individual lot. In the attempt to arrive at general principles, we must, of course, leave out of consideration what is peculiar to individuals, although the study of it will form the most important part of the practical educator; just as the scientific pathologist, in his general diagnosis of disease and its treatment, leaves out of sight the idiosyncrasies of particular patients, which yet are the principal study of the practising physician. But, after deducting this element of individuality, there is left the wide field of general facts and forces, and the study of the combination of these forces and their resultant influence on the formation of character is the study of education as a science. We must learn the natural order of development of the moral and intellectual powers, and their relations to each other as the legislative, the executive, and the subject powers in the constitution of man, and thence deduce the methods by which the growth of his faculties may be aided, and this due hierarchy of powers be maintained.

* "An Attempt to establish a Relation between the Velocity of the Wind and its Force (Beaufort Scale), with some Remarks on Anemometrical Observations in general." By Robert H. Scott, F.R.S.—*Quart. Journ. Met. Soc.*, vol. ii., p. 109.

This will include not only right methods of teaching, but what subjects ought to be taught, in accordance with the natural order of development, and thus set at rest the ceaseless controversies about what should or should not be taught in schools for boys or girls, or to different classes of society, and give a final answer to that eternal *cui bono* which is the bane and the torment of every educational reformer, the leading of the imagination to conceive, and the heart to love and worship, pure and noble ideas, finding their sum and perfection in the supreme ideal God. How these supreme objects are attained must be learnt by the study of the mental laws of association and attention which govern the formation of habit, passive and active. When we know how to form habits, we shall have gained the master power of education—the power of creating what has been truly called a second nature—acting as instinctively as the original one. How little this is generally understood may be seen by the common phenomenon of education acting by contraries—the son of a miser turning out a spendthrift; the son of a pious clergyman becoming a profligate; a Luther issuing from an Augustine monastery; a Voltaire from a college of Jesuits. But the study of education as a science must include, besides physiology and psychology, which give only what may be called the statics of human nature, the study of its dynamics, human nature in action, as we see it in the world around us, and as it is recorded in history—not the mere history of wars and dynasties which ordinarily goes by that name, but the history of human societies—of human development through religion, art, science, and legislation. Only through such observations and study can we arrive at the springs of human action, and more especially at that spiritual or idealistic element which can as little be seized through the analysis of the psychologist as the vital force by an anatomical dissection, and which yet is the most potent of all; for, as Mr. Morley has truly said, men are governed by their ideals. In the study of education as a science must be included not only the education of individuals but that of nations. That nations have a character as well as individuals, and that their prosperity or failure equally depends upon it, all history attests. Can any question be more worthy of scientific study than how these characters are formed? What conditions favour the good and check the evil in them? How far are they modifiable at all by direct action of any sort, legislative or otherwise? How do legislative enactments affect the character of a people? and what are those defects in legislation which make it also act by contraries and produce and foster the very evils it was intended to check? If it be said that these questions concern the statesman rather than the educator, the answer is, that the statesman is an educator, and the most important of educators, since his work directly in some degree, indirectly in a very large degree, helps to form that social atmosphere which is the most active force in the education of each individual, and before which the wisest teachers will be comparatively powerless. The difficulty as to time makes it impossible to indicate, however briefly, all the practical questions requiring for their solution to be brought to the test of a scientific theory. But there are some which have such a paramount importance at the present time, and bear so immediately on our whole educational system, that they must at least be alluded to. The first of these is the question of class in education. In England and Ireland we have, as a rule, preserved in our educational arrangements the class distinctions which prevail in our society, whilst, as is well known, in Scotland, which had the earliest system of national education, in Germany, in Switzerland, and in the United States, no such distinctions prevail, and the primary school, the secondary school, and the university form parts of one whole, each giving the instruction suited to a particular age and period of mental development, not to a

particular social class. The important study of the two systems in their moral and social, as well as purely educational results, leading to some authoritative expression of the balance of evidence on either side, would greatly assist us in dealing with the general problem of national education, and guide us in the gradual remodelling of our educational institutions, now going on under the impulse of that vast movement of transition which characterises our epoch. A second problem preparing for solution is that of sex in education, and as there is none that touches on such burning questions, so there is none that more urgently requires to be considered in the spirit of scientific enquiry, which sets aside prejudice and partisanship, and seeks the truth only. Whether the difference between the sexes is one of kind, of degree, or of proportion between the various mental and moral faculties, and how the difference should be dealt with in education; whether the best training for both sexes can be given by the same methods, and under similar school arrangements, by the mixed or by the separate system; whether regular and sustained mental effort, under the hygienic conditions equally essential for both sexes, carried on through the transition from girlhood to womanhood, is injurious to the perfect development of women's physical constitution, or tends rather to calm and steady the nervous system, and establish the healthy balance between the intellectual and emotional nature essential to the sound mind in the sound body—what, in short, is the true type of perfect womanhood, and by what process of education it is to be developed. All these questions are waiting for thorough and impartial study, and it is not too much to say that on their right solution the future health and happiness of the race largely depend. The last point is the system of examinations, which has of late years assumed such vast proportions as practically to govern our whole scholastic system. Examinations, which were intended to test the progress of the learner, are now in danger of becoming the sole end and aim of learning. Instead of the examination following, as it ought, the lead of the teaching, the teaching all works up to the examination. It is, therefore, of primary importance that we should decide on some scientific principle what is the right system of examination: whether it should be mainly directed to test the acquisition or retention of knowledge, or the power of using the knowledge acquired; whether the knowledge tested shall be that of words and rules, or of ideas and principles underlying the rules; whether the power it rewards shall be that of accurately recollecting facts, or of accurately reasoning from the facts remembered. Since an examination is now made the inevitable portal through which every professional career must be entered, as is our system of examination, so will be our system of education; the results it tests and rewards will be the only ones aimed at. And yet even here, in this Association, where every science has an illustrious representative except this one of education, and it has for its advocate only a woman—a woman and, therefore, weak; a woman and, therefore, debarred from aiding her weakness by the higher training reserved for the stronger sex only—even here this science, so little thought of, so contemptuously ignored, is the crowning science of all, for it is the application of all the sciences to the production of the highest of all results, the perfect man, brought up to the measure of the standard of the fulness of that Divine image whose germ was implanted in our nature, when, in the long series of his evolutions from the primeval monad to the human being, so fearfully and wonderfully made, "the Lord God breathed into his nostrils the breath of life, and man became a living soul."

SECTION A.—Tuesday, August 25.

The Earl of Rosse, F.R.S., exhibited a large photograph of the moon, which, he said, had been lent to him by Mr. Warren De La Rue, who had

had much to do with the construction of the great reflector of the Melbourne telescope, with which the picture was taken. Although the great telescope at Melbourne had been in use for some time, it was the first really successful photograph of the moon which had been taken with it, partly because the reflector had been used for other work, and partly because the nights on which good lunar photography is possible are so very few. Currents of air of different densities were usually moving in large volumes one above the other, and these so refracted the rays of light as to cause the stars to appear to the eye to twinkle, and to cast unsteady images of the different parts of the moon when the reflector was used in the attempt to obtain photographs. Hence, not only must the sky be clear, but the air very still at all elevations before good lunar pictures can be obtained; so it was not surprising that in the short period which elapsed after the reflector was made and before it left Dublin no good photographs were taken. Before the advent of the photograph he was then exhibiting, the best that had ever been taken had been obtained by Mr. Rutherford, of New York, who used a refractor for the purpose; the lens had been made specially for the work, and had been ground to bring the blue and violet rays of the spectrum to a sharp focus on the sensitive plate, since these rays, and not those which are most luminous to the eye, are those which exert an influence over the chemical substances contained in photographic films. Mr. De La Rue had taken many beautiful photographs of the moon at his observatory at Cranford, and was noted for his skill in the work; but he believed that Mr. De La Rue was of opinion that Mr. Rutherford had obtained a better photograph of the moon than himself, the atmospheric conditions chancing to be so good on one particular night. Although Mr. Rutherford had obtained his good picture so far back as 1865, he had never been able to obtain another equal to it since; therefore the single picture did not prove that a refractor was better than a reflector for lunar photographic work, but simply that atmospheric conditions were exceptionally good on a particular evening. He had carefully compared Mr. Rutherford's picture—of which he possessed a copy—with the one taken with the Melbourne reflector, and thought that the latter was slightly the better of the two. He could not, however, speak with certainty, and should like to have the aid of good photographic critics. Both pictures had been enlarged from the original negatives, and Mr. Rutherford's had been much more enlarged than the other. The original negative taken with the Melbourne reflector was about three and a half inches in diameter. The phase of the moon was nearly the same in both pictures.

SECTION D.—Tuesday, August 25.

PROFESSOR HUXLEY said at this period of the meeting of the British Association he was quite sure it would be unnecessary for him to call to their minds the nature of the business which took place at their sectional meetings. They there registered the progress which science had made during the past year, and did their best to advance that progress by original communications and free discussion. But, when the honourable task of delivering that lecture was imposed upon him, it occurred to him that the occasion of an evening lecture might be turned to a different purpose—that they might then, with much propriety and advantage, turn their minds back to the past, and consider what had been done by the great men of old, who had gone down to their graves with their weapons of war—who fought bravely for the truth while they lived; and, when recognising their merits, they should feel grateful for their services. He proposed, therefore, to take a retrospect of the condition of that branch of science with which it was his business to be more or less familiar. He would not go back to a very remote period. He

would not go further back than the seventeenth century; and his observations would be confined almost entirely to the science of the time between the middle of the seventeenth century and the middle of the eighteenth century. He proposed to show what great ideas in biological science took their origin at that time, and in what manner the speculations then originated have been developed, and to note the relation in which they stand to what is now understood to be the body of scientific biological truth. The middle of the sixteenth century, or rather the early part, was one of the great epochs of biological science. It was at that time that an idea which had been dimly adumbrated previously took that solid form which can only be given to scientific ideas by the definite observation of fact—he meant the idea that vital phenomena, like all other phenomena of the physical world, are capable of mechanical explanation, that they are reducible to law and order, and that the study of biology in the long run is an application of the great sciences of physics and chemistry. The man to whom they were indebted for first bringing that idea into a plain and tangible shape, he was proud to say was an Englishman—William Harvey. William Harvey was the first clearly to explain the mechanism of the circulation of the blood; and by that remarkable discovery of his, and by the clearness and precision with which he reduced that process to its mechanical elements, he laid the foundation of a scientific theory of the larger part of the processes of living beings—those processes which are now called processes of sustentation; and, further, by his studies of development he first laid the foundation of a scientific knowledge of reproduction. But, besides these great powers of living beings, there remained another class—the functions of the nervous system, with which Harvey did not grapple. It was left to a contemporary of his, René Descartes, to play a part in relation to the phenomena of the nervous system, which, in his judgment, was precisely equal in value to that which Harvey played in regard to the circulation. And when they considered who Descartes was, how brief the span of his fifty-four years of life, the lecturer thought it was a truly wonderful circumstance that this man, who died at fifty-four, should be one of the recognised leaders of philosophy. Descartes' propositions on this subject he would lay before them, and each of them he would compare as briefly as might be with the existing state of physiological science, in order to show in what position with respect to physiology—ay, even the most advanced physiology of the present time—this man stood. And, happily, said Professor Huxley, the matters with which we shall deal are such as to require no extensive knowledge of anatomy—no more, in fact, than such as, I presume, must be familiar to almost every person. I think I need only premise that what we call the nervous system in one of the higher animals consists of a central apparatus composed of the brain, which is lodged in the skull, and of a cord proceeding from it, which is termed the spinal marrow, and which is lodged in the vertebral column or spine, and that from these soft, white masses, for such they are—there proceed cords which are termed nerves, some of which nerves end in the muscles, while others end in the organs of sensation. That bald statement of the fundamental composition of the nervous system will be enough for our present purpose. The first proposition that you find definitely and clearly stated by Descartes is one which you will find very familiar to you at the present day. It is a view which he was the first, so far as I know, to state, not only definitely, but on sufficient grounds, that the brain is the organ of sensation, of thought, and of emotion—using the word organ in this sense, that certain changes which take place in the matter of the brain, are the essential antecedents of those states of consciousness which we term sensation and thought and emotion. Now-

adays that is part of popular and familiar knowledge. If a friend disagrees with your opinion, runs amuck against any of your pet prejudices, you say, "The poor fellow, he is a little touched here," by which you mean his brain is touched—he is not thinking properly, thereby implying that his brain is in some way affected. But in Descartes' time, and I may say for 150 years after, the best physiologists had not reached that point. It remained down to the time of Bichat open to question whether the passions were or were not located in the abdominal viscera. It is a notion which points scientific investigation for a moment, and, therefore, this in itself was a very great step. It is a statement which Descartes makes in the beginning, and from which he never swerves. In the second place, Descartes lays down the proposition that all the movements of animal bodies are effected by a change of form of a certain part of the material of their bodies, to which he applies the general name of muscle. You must be aware of this, that in reading Descartes you must use the terms in the sense in which he used them, or you will not understand him. That is a proposition which is now placed beyond all doubt whatever. If I move my arm, that movement is due to a change of this mass of flesh which is placed in front of it, the biceps muscle. It is shortened and it becomes thicker. If I move any limb, the reason is the same. As I speak, the different tones of my voice are due to the accurately adjusted complication of a multitude of particles of flesh; and there is no considerable movement in the animal body which is not, as Descartes said, resolvable into those changes of form of the matter which is termed muscle. But Descartes went further, and stated that in the normal and ordinary condition of things these changes in the form of muscle in the body only occur under certain conditions; and the essential condition of the change was, says Descartes, the motion of the matter contained within the nerves, which go from the central apparatus to the muscle. Descartes gives this moving matter a particular name. He called it the animal spirits. Nowadays we should not say that the animal spirits existed; but we should say that a molecular change takes place in the nerves, and that that molecular change is propagated at a certain velocity, from the central apparatus to the muscle. Nevertheless, you will perceive that the modification in the idea is not greater than that which has taken place in our view of electricity—in our change of conception of it as a fluid to our conception of it as a simple condition of propagated molecular change; so that the fundamental conception remains the same; and just as we say the molecular change which comes of contraction of the muscle is propagated from the central nervous system towards the muscle, so Descartes says the animal spirits flow from the central apparatus to the muscle. Modern physiology has discovered the exact rate of this change; but the fundamental conception remains exactly what it was in the time of Descartes. Thirdly, Descartes says that, under ordinary circumstances, this change in the contents of a nerve which gives us a contraction of the muscle is produced by a change in the central nervous apparatus—as, for instance, the brain. We say at the present time exactly the same thing. Descartes said the animal spirits were stored up in the brain and flowed out along the motor nerves. We say that a molecular change takes place in the brain that is propagated along the motor nerve. The evidence of that was abundantly supplied by experimental research, which showed the nerves had no activity in themselves—that if they were cut off close to the central apparatus the change was no longer propagated through them. That proposition then, also, was made completely good by modern research. But further, Descartes stated that the sensory organs, or those apparatuses which give rise to our feelings, and which, as he had

just said, were connected with the brain and other central apparatuses by nervous chords—that those sensory organs, when acted upon by those influences which give rise to sensation, caused a change in the sensory nerves, a flow of animal spirits along those nerves, which flow was propagated to the brain. In other words, if he (Professor Huxley) looked at a candle held before him, the light falling into his eyes, striking on the retina, gave rise to an affection of the optic nerve, which affection Descartes described as the flow of the animal spirits to the brain. What had been done since his time was to define this more carefully, to make out more precisely what were sensory and what motor nerves; and within quite a recent period, to ascertain the nature of the changes which go on and accompany those modifications in the nerve itself when this propagation takes place. But, he repeated, in all our present notions of the operation of the nerve they were building upon Descartes' foundation; not only so, but Descartes laid down over and over again in the most distinct manner a proposition which is of the most paramount importance, not only for physiology, but for psychology. Descartes said when a body which is competent to produce a sensation touches the sensory organs, as in the illustration he had just shown, what happened was a production of a mode of motion of the sensory nerves—what happened in that sensory nerve was nothing but the mode of motion; that mode of motion was propagated to the brain; that which took place in the brain was nothing still but a mode of motion. But, in addition to this mode of motion, there is, as everybody can find by experiment for himself, something else which is not a mode of motion, which can in no way be compared to motion, which is utterly unlike it, and which is that state of consciousness which we call a sensation. Descartes insisted over and over again upon this total disparity between the agent which excites the state of consciousness and the state of consciousness itself. He told us that our sensations were not pictures of external things, but that they were symbols or signs of them. And in doing that he made one of the greatest possible revolutions not only in physiology, but in philosophy. Up to his time it was a notion that visible bodies, for example, gave off from themselves a kind of film which entered the eye, and so went to the brain, and thus the mind became aware of the actual body or pictures of the thing given off from it. It was to Descartes that they owed that revolution in their ideas which had led them to see that they had really no knowledge whatever of external things. In laying down that proposition upon what he believed to be an irrefragable basis, Descartes laid the foundation of that form of philosophy which is termed Idealism, which was subsequently developed to its uttermost by Berkeley, and has taken all sorts of shapes since. But Descartes noticed not only that, under certain conditions, an impulse made by the sensory organ might give rise to a sensation, but that, under certain other conditions, it might give rise to motion, and that this motion might be effected without sensation, and not only without volition, but even contrary to it. He would now ask their patience for a moment while he read a very remarkable passage from Descartes. In an answer to objections made by the famous Port Royalist Arnaud, Descartes said:—"It appears to me to be a very remarkable circumstance that no movement can take place either in the bodies of beasts, or even in our own, if those bodies have not in themselves all the organs and instruments by means of which the very same movement will be accomplished in a machine, so that even in us the spirit, or the soul, does not directly move a limb, but only determines the course of that very subtle liquid which, running continually from the heart, by the brain, into the muscles, is the cause of all the movements of our limbs, and often may cause many different motions, one as easily as the other.

And it does not always exert this determination, for among the movements that take place in us there are many which do not depend upon the mind at all, such as the beating of the heart, the digestion of food, nutrition, the respiration of those who sleep, and even in those who are awake, walking, singing, and other similar actions, when they are performed without the mind thinking about them; and when one who falls from a height throws his hand forward to save his head, it is in virtue of no ratiocination that he performs this action. It does not depend upon his mind; it takes place merely because his senses being affected by the present danger cause some change in his brain which determines the animal spirits to pass thence into the nerves in such a manner as is required to produce this motion in the same way as in a machine, and without the mind being able to hinder it." He (Professor Huxley) knew in no modern treatise of a more clear and precise statement than that, or a more perfect illustration of what they understood by the automatic action of the brain. And what is very remarkable, in speaking of these movements which arise by a sensation being as it were reflected from the central apparatus into a limb—as, for example, when one's finger is pricked and the arm is suddenly drawn up, the motion of the sensory nerve travels to the spine and is again reflected down to the muscles of the arm—Descartes uses the very phrase that we at this present time employ; he speaks of the *esprits réfléchis*, the reflected spirits; and that this was no mere happy phrase lost upon his contemporaries will be obvious on consulting the famous work of Willis, the Oxford professor, *De Anima Brutorum*, which was published about 1672. In giving an account of Descartes' views he borrows this very phrase from him, and speaks of this reflection of the motion of a sensory nerve into the motion of a motor nerve, *sicut undulatione reflexa*, as if it were a wave thrown back; so that we have not only the thing reflex action described, but we have the phrase "reflex" recognised in its full significance.

The last great service to the physiology of the nervous system which had to be mentioned as rendered by Descartes was this, that he first sketched out a physical theory of memory. What he said in substance was this, that when a sensation took place, the animal spirits travelled up the sensory nerve, passed to the appropriate part of the brain, and there found their way between the pores of the substance of the brain; and when that had taken place, when the particles of the brain were pushed aside a little, the passage was made easier in the same direction for any subsequent action, or for any subsequent flow of animal spirits, and consequently the repetition of that action made it easier still, until at length it became very easy for the animal spirits to move those particular particles of the brain the motion of which gives rise to the appropriate sensation. Professor Huxley continued to say that the result of the study of disease, the result of the action of poisonous substances, all conclusively pointed to the fact that memory was inseparably connected with the integrity of certain material parts of the brain; and he (Professor Huxley) knew of no hypothesis by which that was accounted for except by an idea which was essentially similar to the notion of Descartes—a notion that impressions once made, made subsequent impressions easier. So far, the ideas that were started by Descartes had simply been expanded or enlarged and defined by modern research. But in one respect Descartes proceeded further than any of his contemporaries, and had been followed by very few of his successors in later days, although his ideas were for the best part of a century largely dominant over the intellectual mind of Europe. He contended that there was clear evidence that the nervous system acted mechanically, without the intervention of consciousness or the will, which was illustrated by the fact that a man could not prevent the muscle of the eye from winking

when he thought he was going to be struck on the eye. It was a very singular thing that the boldest and most paradoxical notions which Descartes preached had received as much and as strong support from modern physiological research as any other of his hypotheses, which he would endeavour to explain in as few words as possible. If it should happen to a man that by an accident his spinal cord was broken across, he became paralysed below the point of injury. In such a case his limbs would be absolutely paralysed; he would have no control over them, and they would be entirely insensible. They might prick his feet or burn them, or do anything they liked with them, and they would be insensible. Consciousness, so far as they could have any knowledge of it, was entirely abolished in that part of the central nervous apparatus which lay below the injury. And if a man under these circumstances was paralysed in the sense of not being able to move his own limbs, he was not paralysed in the sense of their being deprived of motion, for if they tickled the soles of his feet with a feather the limbs would be drawn up just as vigorously, perhaps a little more vigorously, than when he was in full possession of the consciousness of what happened to him. That was what was called the reflex action. The impression was transmitted from the skin to the spinal cord, and the impression was reflected from the spinal cord, and passed into the muscles of the limbs, and they were contracted in this manner; and that action was purely automatic, and an entirely mechanical action. Suppose they dealt with a frog in the same way, and cut across his spinal cord. The frog was thus precisely in the same condition. So far as the frog was concerned, the limbs were useless; but they had only to apply irritation, and they had them drawn away. Now, if they had any ground for argument at all, they had a right to assume that, under these circumstances, the lower half of the frog's body was as devoid of consciousness as the lower half of the man's body. He repeated that, if they had any ground of reasoning in these matters at all—if they had a right to assume that the body of the frog below the section was in this case absolutely devoid of consciousness, was a mere machine like a musical-box, a barrel-organ, or a watch—then came a remarkable circumstance. In the first place, that movement of the limbs was purposive—that was to say, if they irritated the skin of the foot, the foot was drawn away from the danger, just as it would be if the frog were conscious and rational, and could act in accordance with a rational motive. But they would say it was easy to understand how such an action as that might take place mechanically. Let them, then try another experiment. Take this creature, which certainly could not feel, and touch the skin of the body with a little acetic acid or vinegar (which in the frog that can feel gives rise to considerable pain)—in that case there could be no pain, because the application was made below the point of section; nevertheless the frog lifted up the limb of the same side and applied the foot to the rubbing off of the acetic acid; but if they held down the limb of that side, so that the frog cannot use it, he would put up the limb of the other side and turn it across his body, and use it for the same rubbing off process. It was impossible that a frog, if it were in its entirety—if it were reasonable—could perform actions more purposive than that, and yet they had a complete assurance in that case that the frog was not acting from purpose, but was a mere irrational acting machine. But suppose that instead of making the section in the middle of the body—suppose they made it in such a manner as to divide the hindmost part of the brain from the foremost part—and suppose the foremost two-thirds of the brain taken away, the frog is then absolutely devoid of spontaneity. It would remain for ever where they left it; it would not stir unless it were touched; it sat upright, in the position in which a frog habitually did so. But it differed from the frog which he had just described in this, that if they threw

it into the water it began to swim, and swam just as well as a perfect frog did. Now, swimming, they knew, required a combination—a careful and delicate combination—of a great number of muscular actions; and the only way in which they could account for that was, that the impression upon the sensory nerves of the skin of the frog by the contact of the water conveyed to the central nervous apparatus a stimulus which set going a certain machinery by which all the muscles of swimming were brought into play, and that remarkable operation exerted. Moreover, if the frog be stimulated, be touched with any irritating body, although they were certain it could not feel, it jumped and walked as well as a complete frog could do. But it could not do more than that. Suppose yet one other experiment; suppose all that was taken away of the brain was what they called the cerebral hemispheres, the most anterior part; if that part was removed skilfully, the frog might be kept in a state of bodily vigour, perhaps, for months, or it might be for years, but it would sit for ever in the same spot. It saw nothing, it heard nothing; it would starve sooner than feed itself, although if food were put into its mouth it would swallow it. On irritation, however, it jumped or walked, and if thrown into water it swam. But the most remarkable thing it did was this—If they put it in the flat of their hand it would sit there crouched perfectly quiet, and would sit for ever; if they inclined their hand gently and slowly, so that the frog would naturally tend to slip off, they would feel the creature's fore paws getting slowly on the edge of their hand until it could just hold itself there so that it did not fall off; if they turned their hand vertically it would mount up with great care and deliberation, putting one leg in front and then another until it balanced itself with complete precision upon the edge of their hand; and if they turned their hand again it would go through the opposite set of operations, until it sat in perfect security upon the back of the hand. All that required a delicacy of co-ordination and adjustment of the muscular apparatus of the body, which was only comparable to that of a rope dancer among ourselves. In reference to physiological experiments, Professor Huxley mentioned a case which appeared in the *Journal des Débats* of a French soldier who was wounded at the battle of Bazeilles. He was shot in the left parietal bone; he recovered, and it was found that he was paralysed on the opposite side of the body—that is to say, his right arm and right leg were completely paralysed. He led two lives—a normal and an abnormal life. In his normal life he was an exceedingly honest, well-conducted man; but in his abnormal life he was an inveterate thief. When he was in the latter condition, the functions of his cerebral hemisphere were partially annihilated. That was a matter which greatly interested him (Professor Huxley), because it bore on the phenomena of mesmerism. If Descartes had had such facts before him, need it be said his theory of animal automata would have been enormously strengthened? He would have said, "Here I show you the case of a man performing actions infinitely more complicated, positively more rational than any of the ordinary operations of animals, and yet we have positive proof that these actions are taking place by pure mechanism." What objection, then, had they to urge against his doctrine that the whole animal world was in that condition, and that, although all these animals were capable of these actions, they could neither see, nor hear, nor smell, nor have any consciousness whatever. Descartes put forth that theory, and the more remarkable of his followers acted upon it; and he really did not know that they were in the slightest degree competent to give a definite and clear refutation to this hypothesis at the present day. They could have no comprehension of consciousness in any creature but themselves. The matter was one wholly incapable of demonstrative proof one way or another. But he must say for himself—taking

into account that great doctrine of continuity which forbade one to suppose that any natural phenomena came into existence suddenly, and that without some precedent gradual modification tending towards it—taking that great doctrine which was borne out by science on the one hand, and taking into account on the other the unquestionable fact that even the lowest vertebrate animals which possessed brains at all possessed in a small and rudimentary condition those parts which they had every reason to believe were the organs of consciousness in themselves—then it seemed to him vastly more probable that the lowest vertebrate animals, although they might not possess the sort of intensity and variety of consciousness which they had themselves, yet had it in a form proportioned to the comparative imperfection of the organ of that consciousness. He thought that that was probably the most rational conclusion that could be come to; and it had this advantage, which could not, he thought, with propriety be urged in questions that were susceptible of demonstration, but which was well worth taking into consideration in a case like the present, that it set us free of all the terrible consequences of making any mistake on this subject. He must confess that, looking at the course of nature, viewing the terrible struggle for existence everywhere going on in the animal world, and considering the frightful amount of pain which must be given and received in every part of the animal world if animals felt, that was a consideration which would incline one rather to Descartes' view. But, on the other hand, considering that if they regarded animals as machines they might be careless in their treatment of them or indulge in cruelties, he must confess that he thought it better, on the whole, to err on the right side, and not to agree with Descartes in that matter. But let him point out to them, that although they might come to the conclusion that Descartes was wrong in supposing that animals were insensible machines, it did not in the slightest degree follow that they were not sensitive and conscious automata; in fact, that was a view which was more or less clearly in the minds of every one of them. When they talked of the lower animals being provided with instinct and not with reason, what they really meant was, that although they were sensitive and conscious, yet they acted mechanically, and that their sensations, their thoughts, if they had thoughts, their volitions, if they had them, were the products and the consequences of their mechanical arrangements. He must confess that that popular view was to his mind the only one which could be scientifically adopted. They were bound by everything they knew of the nervous system to believe that when a certain molecular change was brought about in the central part of the nervous system, that change, in some way utterly unknown to them, caused that state of consciousness which they termed a sensation. In certain cases certain changes gave rise to conditions of pleasure and pain, and to those emotions which, in themselves, they called volition. He had no doubt that that was the relation between the physical processes of the animal and his mental processes. He took it that what they could show in one case among animals held good in all—that consciousness was a spectator and not an actor, that they are, in fact, conscious machines. Professor Huxley went on to say that, so far as he knew, the problem which he had hitherto been discussing was an entirely open one. He did not know that there was any reason whatever on the part of any person, no matter what his opinions were, which could prevent him, if so inclined, from accepting the doctrine which he had endeavoured to put before them clearly—that, so far as he knew, animals were conscious automata. That doctrine was perfectly consistent with any view that they might choose to take; and in respect of that view there were curious subjects of speculation—whether animals possessed souls or not; and

whether, if they possessed souls, those souls were immortal? The doctrine was not inconsistent with the Scriptural text concerning the "beast that perisheth." Nor, on the other hand, so far as he knew, did it impede anyone from entertaining the conviction ascribed by Pope to his untutored savage—that when he passed to the realms of the blest his faithful dog should bear him company. In fact, all these accessory questions involved problems which could not be discussed by physical science, inasmuch as they lay not within the region of physical science, but came within the scope of that great mother of the sciences—philosophy. He should not wonder if they were told by persons speaking with authority—not, perhaps, with that authority which was based on knowledge and wisdom, but still with authority—that his intention in bringing this subject before them was to lead them to apply the doctrine he had stated to men as well as brutes; and it would then, certainly, be further stated that the logical evidence of such doctrine is Materialism, Fatalism, and Atheism. Logical consequences were very important, for in the course of his experience he had found that they were a scarecrow to fools and a beacon to wise men. Logical consequences, he thought, could take care of themselves. The only question for any man who respected himself to ask was this—Was this doctrine true, or was it false? As he had said, the logical consequences of the doctrine could only serve as a beacon, warning a wise man to ponder well whether the doctrine be true or not. He believed that the doctrine referred to applied to man as well as to brutes. But he took leave to say that, in his conviction, there was no such logical connexion as was pretended between the doctrine which he accepted and the consequences which people pretend to draw from it. He did not say that here on this occasion for the first time. Many years ago he had occasion, in dealing with the philosophy of Descartes and other matters, to state his conviction pretty fully upon these subjects; and if those who cared to investigate these matters in a spirit of candour and justice would look into his writings, they would see his reasons for not imagining that such conclusions could be drawn from such premises. To those who did not look into such matters with candour, and with the desire to know the truth, he had nothing at all to say, except to warn them on their own behalf of what they do, for assuredly if for preaching such a doctrine as he had preached that night he was cited before the bar of public opinion, he should not stand there alone. On his one hand he should have many theologians—St. Augustine, John Calvin, and a man whose name should be well known to the Presbyterians of Ulster, Jonathan Edwards—unless, indeed, it were the fashion to neglect the study of the great masters of divinity, as many other studies were neglected nowadays. He should have upon his other hand, among the philosophers, Leibnitz; he should have Père Malebranche, who saw all things in God; he should have David Hartley, the Anglican divine; Charles Bonnet, the eminent naturalist, and one of the most zealous defenders Christianity has ever had. He thought he should have, within easy reach, at any rate, John Locke—certainly the school of Descartes, whatever they are, if not their master; and he was inclined to think that in due justice a citation would have to be served upon Immanuel Kant himself. In such society it might be better to be the prisoner than the judge. But he would ask those who were likely to be influenced by the din and clamour which was raised about these questions, whether they were more likely to be right in assuming that these great men he had mentioned—the fathers of the Church, and the fathers of philosophy—knew what they were about, or that the pigmies who raise this din knew better what they meant. It was not necessary for any man to occupy himself with problems of this kind unless he so chose. Life was full enough, filled amply to the brim by the performance of its

ordinary duties. But let him warn them, let him beg them to believe that if a man elected to give a judgment upon these great questions; still more, if he assumed to himself the responsibility of attaching praise or blame to his fellow-countrymen for the judgments they might venture to put forward, unless he would commit a sin more grievous than most of the breaches of the Decalogue, he must avoid a lazy reliance upon information that was gathered by prejudice, and filtered through passion. Let him go to those great sources which were open to him as to every man, and to no man more than an Englishman; let him go back to the facts of nature, and to the thoughts of those wise men who for generations past had been the interpreters of nature.

SECTION C.—Wednesday, August 26.

Professor James Thomson read a paper on "The Jointed Prismatic Structure of the Giant's Causeway." He stated that the opinions prevailing among geologists as to the manner in which the jointed prismatic structure in basalt and other igneous rocks has arisen, involve generally one or other, or a combination of both, of the two following principles:—1st. Prismatic fracture by shrinkage in cooling, like the cracking which may be observed in starch or mud in drying. 2nd. An assumed spheroidal concretionary action of the lava or basalt in solidifying from the molten state. He had accepted, as appearing to be a part of the truth, the supposition of prismatic fracture by shrinkage in cooling, and about twelve years ago had offered a theory of the origin of the jointed prismatic structure, involving primarily that supposition, and which had been suggested or indicated to him by certain phenomena which he had observed in the stones of the Giant's Causeway. This theory, although having one fundamental supposition in common to it and to some other views which had been previously put forward, yet in other respects was altogether divergent from any such previous views. Whatever other attempted explanations of the jointed prismatic structure he had met with, indeed, appeared to him to be plainly and decidedly untenable. All that he had met with, whether founded on the supposition of prismatic fracture by shrinkage, or of spheroidal concretionary action, or of both together, appeared to him essentially to involve incongruous or impossible suppositions, or else to be quite vague and unsatisfactory. As for the spheroidal concretionary theory, he believes it to be founded on a total mistake. He regards the spheroids so often met with in decaying basalts or lavas as being not concretions at all, but as being the results of decay or decomposition penetrating from without inwards in blocks into which the rock has been divided by fissures, which may have arisen from various causes. From this and other reasons which he stated at length, he is led to give no credence whatever to the spheroidal concretionary theory of the jointed prismatic structure. The chief points of his own theory may be briefly sketched out as follows:—He supposes that the division into prisms has arisen by splitting—through shrinkage—of a very homogeneous mass in cooling; and that the cross-joints are fractures, which have commenced in the centre of the column, and have advanced to the outside, as a circle increasing in diameter. This mode of fracture, he thought, was evidenced by various markings and other indications on the stones. They usually show a remarkable symmetrical conformation round the outer parts of their cross-joint faces, presenting an appearance which had struck him as being like a complete circular conchoidal fracture, often with roughly figured rays from the centre, such as in the ordinary conchoidal fracture are seen emanating from the point where the blow has been struck. The cross-joints he takes to be posterior to the prismatic fissures. But according to the spheroidal concretionary theory they are supposed to be contemporaneous in origin with the

prismatic faces of the columns, both the longitudinal faces and the cross-joint faces being in that theory supposed to be different parts of the surfaces of spheroids growing larger in solidifying till they meet, and can grow no more; or till they "press against each other" and "squeeze" themselves together, so as to receive flattened faces, instead of a rounded form. And according to the views of some who maintain the supposition of prismatic fissure by contraction, and deny the spheroidal concretionary theory (Mr. Scrope, for instance—*Volcanoes*, second edition, 1862, p. 104) the cross-joints are supposed to be contemporaneous at each part of the length of the column, with the prismatic fissures at the same place; the cross-joints being supposed to be successive bounding faces between the solidified end of the column and the as yet molten lava, into which the solidification is advancing, and the prismatic fissures being supposed at each period to extend quite forward to the molten lava. Mr. Scrope's view, as he himself states in the passage referred to, comprises the supposition that the concavity of the ball-and-socket-like cross-joints ought to be always directed upwards; or, in other words, that each separate piece of the joint column ought, according to his supposition, to have its bottom convex and its top concave. The supposition is not verified, but is decidedly controverted by the basaltic columns of the Giant's Causeway, the cross-joints being often concave upwards, and often concave downwards, and often nearly flat. There are not many very distinct ways in which we can suppose a fissure to have spread across a column or prism of solid stone. First, if we for a moment suppose the fissure to have begun at one side of the column, and to have advanced across to the opposite side, we must expect to find the resulting fracture quite unsymmetrical, and presenting very different appearances at the places where it entered the previously unbroken stone prism, and where it came to its termination, leaving the column broken behind its advancing front. We find no such appearance; but, on the contrary, we commonly find a very remarkable appearance of approximate symmetry of character in the cross-joint, with respect to the different sides and angles of the column. Perfect symmetry is, of course, not to be expected, as the columns themselves are often far from being of any regular or symmetrical form; but so far as Professor Thomson's observations of the stones in the Giant's Causeway have extended, he believes no appearance is to be found indicating an advance of the fissure across the column, from one side to the opposite, in any of the joints which exhibit, in other respects, the usual remarkable features. There may, no doubt, be numerous cases of fractures due to shattering, by causes different from those which have produced the ordinary remarkable joints. Next, any idea that the cracking of the column could have simultaneously begun all round the circumference, and advanced to terminate in the centre, requires little more than to be brought before the mind for consideration to be rejected as untenable. There seems then to remain nothing to suppose but that the ordinary cross-joint fissures came into existence first in the interior of the column, and then flashed out towards the circumference. In order to produce the cross fractures commencing in the centre, he supposed that a longitudinal tensile stress must have existed in the middle of each column previously to the cracking of the cross-joints. To account for such a tensile stress, he suggested, as a probable hypothesis, that after the column was formed, chemical action, caused by infiltration of water, might cause an expansion of the outside of the column; and that the outer part, thus growing longer, would pull the internal part more and more intensely, until at last the internal part would give way and break into short lengths. The fissures thus formed, it is obvious, must stop short without extending quite to the outside of the column, as the pull causing the fracture in the interior is due purely to longitudinal push in the

outer part of the column. That outer part, therefore, will not be subjected to the pull at all, and so the enlarging circular conchoidal fracture should be expected to stop short without penetrating to the outside of the column, especially at the angles. In the event of the central part cracking, and so ceasing to bear a pull, the outer part being less resisted than before, would increase in length in the immediate neighbourhood of the new internal fissure, and so would bring parts nearer the circumference than before into the condition of being subject to a pulling stress. Also, the reverberation or tremor at the instant of the cracking might, it seems reasonable to suppose, carry the advancing circular edge of the fissure somewhat farther out than the region which would be subjected to a pull if the action were slow, instead of being by a start. The appearances of the cross-joints, with the central area of each like a circular or oval flattish face, or like the convex or concave form of a watch-glass, but not extending out quite to the angles, and usually not quite out to the sides of the columns, seem to be in accordance with the suppositions here made, and to give considerable corroboration to them. The cracks, if formed as supposed, without extending quite to the outside of the column, would constitute places of weakness, from which under the shattering influence of earthquakes or other causes, fresh fractures would readily proceed quite to the outside, severing the columns completely across; but these fresh fractures occurring in ways quite different from those in which the original circular ones had done, could not be expected to be in continuity with the supposed original circularly terminating fissures. Thus is accounted for the approximately circular outer boundary to the flattish or lunette-shaped middle part of the cross-joint, which is very commonly to be seen. On a visit to the Giant's Causeway, in the summer of 1869, Professor Thomson had noticed some phenomena tending to confirm his views. He met with several instances in which a small mass of stone, different in texture and in hardness from the rest of the basalt, showed itself in the cross-joint of the column; and in which the joint presented to his view the appearance as if the cross fracture had originated at and spread out from this spot of irregular quality. When this extraneous or irregular lump happened to be near the middle of a column, there appeared to emanate from it, in all directions, approximately straight but roughly-formed rays; and when the lump happened to be near one side of the column, the rays emanating from it spread out in curved forms like a brush, and the several rays in proceeding outwards seemed to bend gently somewhat toward the nearest external face of the column. This seemed as if they had tended to run so as at each moment to be advancing in a direction approximately perpendicular to the advancing circular or oval edge of the enlarging fissure. If a fracture originating at one side of a column were to advance across to the other side, and in so doing were to cut across any irregular lump in the mass, that lump would leave a kind of tail extending from itself forward in the direction of propagation of the fissure; but the part of the fissure formed before arriving at the lump would be scarcely at all influenced by the presence of that irregularity. A tail emanating in this way from an irregular lump or a vesicular cavity, and extending forward in the direction of advance of the crack, is continually to be noticed in the breakage of flints, glass, basalts, and other brittle substances. But the cases noticed at the Giant's Causeway, in which, from an included lump, the lines radiated out in various directions, and were curved when the lump was eccentric, tend to corroborate the supposition that the fissure had its beginning at the irregular lump, where some local weakness or overstraining might exist, and that it flashed out from thence towards the circumference of the column. In conclusion Professor Thomson referred to the important light thrown on the subject of basaltic rocks by

Mr. C. Roberts in his communication to this section a few days ago. After intensely heating fire-clay bricks and allowing them to cool, he at pleasure produced a prismatic structure by breaking the brick, but the structure was without the cross-joints. The Professor then explained that basaltic columns had not necessarily cross joints, as they had often been found at great length quite continuous, and he had himself found such columns in the excavations of the Belfast cemetery.

FINE ART.

MR. FOLEY.

JOHN HENRY FOLEY, the "eminent" sculptor, as he might be conventionally called, and really not only an eminent but an excellent sculptor, died on August 27, at the comparatively early age of fifty-six. He was an Irishman, born in Dublin in 1818. He studied first at the school of the Royal Dublin Society of Art; and afterwards in the London Royal Academy, having come over to the English capital in 1834. Here he soon attracted some attention, confirmed when his model of *Innocence*, and the *Death of Abel*, were exhibited in 1839. In 1840 he attained renown by his *Ino and Bacchus*: a work, however, which at the present day ranks rather low in the total of his performances. The *Youth at a Stream*, displayed in Westminster Hall in 1844, was greatly superior to the *Ino and Bacchus*: it remains to this day one of the best examples of the combination, in modern sculpture, of a certain ideal antique grace with a simply natural motive, and true realisation of form. These two statues obtained for Mr. Foley a commission to execute sculptural works for the new Houses of Parliament: the *Hampden and Selden* in St. Stephen's Hall were the result. Other works might be particularised: *The Mother* (1851); *Egeria and Caractacus* in the Mansion House, &c., &c. His very best productions, however, have been in the way of portrait-sculpture. The colossal equestrian statue of *Lord Hardinge*, erected in Calcutta after being for some while on view in London in the courtyard of Burlington House, would alone be enough for reputation—or the *Lord Clive* at Shrewsbury. The *Outram* lately set up in Waterloo Place was full of fiery but self-possessed strength; and the *Lord Herbert* in front of the War Office is remarkable for the expression of thought, not merely indicated in the countenance, but informing the entire figure, even to its robing. Some other portrait works of uncommon mark, from Mr. Foley's hand, have been set up in his native Ireland. He was elected A.R.A. in 1849, and R.A. in 1853. He was, we believe, popular among his brother artists; free from pomposeness or self-assertion; interested in the efforts of others, and the cause of art generally; and glad to do a good turn to any deserving aspirant.

There is little danger in prophesying that Foley will permanently retain high rank among our native sculptors, in virtue of his monumental portraits. They are works of excellent balance. He is more spirited than this sculptor, more manly than that, more graceful than a third, more powerful than a fourth; altogether a man of real and fine attainment, a master in full and calm possession of his means. He knows his art, and himself also. It might be said that, beginning as an ordinary practitioner in the British school of sculpture, he rose by mental superiority to be a leading personage in the European school: and the same remark would to a great extent hold good of his predecessor Bailey, whose lengthened career, however, closed before he had achieved coequal distinction. The death of Mr. Foley is truly a mischance to our sculpture, and leaves a conspicuous gap among the Royal Academicians: they may, nevertheless, if they please, so far recoup their loss as to substitute one excellent sculptor for another, and elect Mr. Woolner as a worthy successor to Mr. Foley.

W. M. ROSSETTI.

CAMBRIAN ARCHAEOLOGICAL SOCIETY.

LAST week the members of this Society held a series of meetings, of which Wrexham was the headquarters. On Monday, August 24, the Society met in the Public Hall at Wrexham, to hear the report for the past year read by the Rev. E. L. Barnwell, one of the secretaries of the Association, whose account of the state of the Society was very satisfactory. In moving the adoption of the report, Professor Babington congratulated his colleagues on the better preservation of local antiquities: some years ago it was common for farmers to break up monumental stones to mend their walls; but at the present day the interest in such remains was more widely diffused. A paper was then read by the Rev. D. R. Thomas on "The Archaeology of Wrexham and the Neighbourhood," in which he gave a sketch of the geological formations of the district, and then passed on to speak of the history of the inhabitants. The Welsh families were of undoubted antiquity; for to the question—

"When Adam delved and Eve span,
Who was then the gentleman?"

the time-honoured and authentic answer had been given—

"Eytton of Eytton and Jones of Llwynonn,
They then were gentlemen."

Descending to more historic times, traces of the Roman occupation were still visible in the remains of their mines at Shinders Oerion, near Caergwle, and in some of the names in the district. Intimately connected with the Roman occupation was the great monastery at Bangor, whose inmates were concerned in the controversy between St. Augustine and the British church; and Mr. Thomas suggested that the slaughter of the monks by Ethelfrid of Northumbria might have occurred at Pant yr Ochain, "the dingle of groaning." This event was followed by the war between Oswald and Penda, and the consequent annexation of the district to the kingdom of Mercia. After a few remarks on the building of Offa's dyke and the invasion of the Danes, who were defeated by the inhabitants at Bullington, the lecturer proceeded to speak of the churches, which were originally built of "wattle and dab," a specimen of which still existed in the curious little church of Melverley, near Oswestry, and hoped that more information would be obtained about their own parish church, one of the finest in Wales, which a former bishop had desired to erect into a cathedral.

On Tuesday the members of the Society paid a visit to Chirk Castle, the seat of Mr. Biddulph. The chapel and other portions of the building are of the fourteenth century. In the picture gallery there is one of the finest portraits extant of the Duke of Monmouth; and the collection of armour includes twenty or thirty muskets of the reign of Charles I., of which there are few, if any, specimens in the Tower of London. The party then went to Ruabon Church, where the Rev. E. D. Edwards exhibited a fresco lately discovered on the south wall, which was probably executed by the monks of Valle Crucis in the thirteenth century. Mr. Whalley, M.P., one of the churchwardens, produced a monumental effigy connected with the church, which he believed to be of the sixth century, but the more skilled archaeologists present attributed it in preference to the fourteenth. Luncheon was hospitably provided by Sir W. W. Wynn at Wynnstay, and the house, which is modern, was exhibited by Mr. Ferrey, son of the architect.

In the afternoon, Offa's dyke, Penygarden, and the adjacent earthworks, were visited; and in the evening a meeting was held at Wrexham, at which Mr. Bloxam contributed a paper on the history of Chirk Castle.

On Wednesday the Society visited Chester. An address was delivered in the Cathedral by Dean Howson, who gave an account of the re-

storiation now in progress, for which more money is required, although 60,000*l.* has been already spent. The Society promised 50*l.* for the restoration of a stall in the choir. St. John's church, the Phoenix tower, and other interesting portions of the city, were also inspected, as well as the Museum of the Chester Archaeological Society.

On Thursday, a number of ladies and gentlemen drove to Hawarden Castle, a modern building, but containing within its grounds the ruins of a British castle, which is mentioned as existing in 790, when Offa, King of Mercia, built his famous dyke.

On Friday, the parish church of Wrexham was examined. The range of arches and pillars in the middle of the church was probably built in the fourteenth century, and the aisles, clerestory, and tower subsequently added. The exterior is of the style used in the reign of Henry VII. Among the sculptures on the tower is a figure of St. James of Compostella, with a scrip and bourdon and the other usual accompaniments; and a curious group of a sow and litter of pigs, which perhaps refers to some local legend. In the chancel is an effigy of Hugh Bellot, who was Bishop of Bangor from 1585 to 1595, when he was translated to the See of Chester, and died the following year. The font is ancient, having been displaced during the civil war, and used successively as a pig-trough and a flower-pot; but is not improved by having been recently re-chiselled.

During the week a collection of objects of interest was exhibited in the Public Hall. These were lent by gentlemen and ladies residing in the neighbourhood, and included rare editions of the Bible and other books, principally relating to Wales; portraits of Charles I. and the Chevalier St. George; a shoe belonging to one of Cromwell's horses, armour, old china; Ashantee, Abyssinian and South Sea Island weapons and ornaments; Roman and Samian ware and coins dug up in Chester; a copper drinking cup weighing 6½ lb., which each burgess of Holt was obliged to empty on his enrolment, a task which is now commuted for a fine of 10*s.*; and many other curiosities of all kinds.

SPURIOUS HEBREW COINS.

SOMEWHAT too late, we fear, to be of full service, we call attention to a recent "find" of silver coins in Palestine which cannot have formed a portion of any genuine coinage. These pieces, some of which have been sold in high quarters at high prices, bear the impress of antiquity in their types and legends. They are all specimens of the stater, or three-quarter shekel—a coin which, during the Roman domination, was accepted by the Sanhedrin in lieu of the legal shekel for the purpose of the Temple tax. There are two types of the first year of the Sabbatic week, five of the second, two of the third, and four of the fourth, none of which exactly coincide with any of those heretofore figured. The letters are of a very ancient form, and there is one of them on one coin, a *mim*, which has a sort of *jerol*, or cross, on the tail, that has not been previously observed. The type is that of the *cos*, or sacrificial goblet, on the obverse, and the three-flowered rod on the reverse, with the legends "Jerusalem the Holy" and "Shekel Isral."

Thus far all is well. But the careful observer will be struck by the following peculiarities:—The coins appear to have been exposed to great violence of heat, but show no signs whatever of wear. Some of them are coated with a hard, nearly black, incrustation, which is not the horn silver, dear to the collector, but resembles a lead slag. File marks on the edges are sharper and less careful than in the few accepted specimens of this curious kind of coin. The surface, instead of that lovely *patina* which covers the unique British Museum specimen of a half-stater, has a hard, dark appearance, such as is produced in an alloy of silver and lead by the less precious metal.

One of them, which seemed to have been tested by the file, showed specks and bubbles that denoted that the metal had been not stamped, but cast. Finally, and conclusively, the specific gravity of a tested specimen was 10.8; which is that of an alloy of two-thirds of silver with one-third of lead; the specific gravity of the English silver coinage being, as is well known, 10.35, and that of the French coinage being 10.33.

It is, of course, possible that these base pieces were issued during that fiscal revolt of the Jews (about A.D. 135, according to general accounts, but concluded in A.D. 122, according to the Talmud), which plays so disproportionate a part in the numismatic theory of De Saulcy and his followers. But although the baseness of the metal, and possibly even the use of the cupola instead of the die, might be thus explained, the absence of wear, and the presence of the peculiar incrustation, in which one or two of the specimens are so encased as to be indistinguishable as to type, can hardly be thus accounted for. That at some time or other these pieces have been cast, either on old matrices or on moulds made from genuine coins, may, we think, be frankly accepted. When this forgery was made, whether seventeen centuries or seventeen months ago, there is little to show, except the absence of true *patina* and of marks of wear.

We cannot too forcibly impress on all collectors of coins of so rare a character, the necessity of having recourse to the sure test of the balance. De Saulcy has set the good example, not followed by his English disciples, of stating the weight of each silver piece which he figures. Of the copper coins he has not given the weights. The statement is made that the results of weighing the copper coinage are so anomalous, that the only effect of publishing them would be to overthrow existing theories on the subject. If that be the case, such theories ought to be overthrown, and will be exploded sooner or later. The careful toil of the Abbé Barthélemy is that which should be taken as the model by the numismatist. In all branches of research it has been from the facts which at first appeared most anomalous that the greatest light has been derived. And justly so; for anomalous, in such a case, simply means something not commonly known, or not known to the particular student. If not only the investigation of weight, but that of specific gravity, were made an essential part of the description of every coin, the speculator would find it impossible to sell bad alloy for genuine silver.

NOTES AND NEWS.

A CONSPICUOUS and very ugly stone obelisk has just been erected at Greenwich Hospital, in the grounds immediately opposite the Ship Hotel. It is dedicated to the memory of the brave men who fell during the war in New Zealand in 1863-4, by their surviving comrades of Her Majesty's ships *Curacoa*, *Miranda*, *Harrier*, *Esk*, and *Eclipse*. In the centre are the words "New Zealand," and on the four sides the names and rank of those whom it commemorates.

THE death is announced of Mr. Thomas Carrick, the portrait painter. His portraits of various political and other celebrities are well known from having been exhibited in most of the popular print shops. Mr. Carrick was a self-made man and self-taught artist. He was born at Carlisle.

MISS LEECH has kindly lent her private collection of her brother's original drawings to the Brighton Pavilion Committee for the purpose of exhibition.

A STATUE is to be erected in Glasgow to the memory of Livingstone. The balance of the Livingstone Relief Fund—about 500*l.*—is to be devoted to this purpose, and other funds raised by subscription.

A FINE collection of engravings from the works

of Wouvermans may now be seen in the passage from Guildhall to the City Library. They have been presented by Mr. Nissen.

A COMMITTEE has been formed at Venice for the purpose of erecting a statue to Nicolo Tommaseo, who was the colleague of Manin during the provisional Government at Venice in 1848.

THE *Chronique*, as a warning to conservators of museums, states that a thief has recently found means of cutting a painting out of its frame in the Marseilles Museum and making off with his booty.

M. FLAMENG's fine etching of Rembrandt's *Night-Watch* may be obtained from M. Lévy, 21, Rue Bonaparte. The finest proofs on parchment cost 300 fr., proofs before letters 100 fr., and ordinary impressions 40 fr.

DOUBLEMARD, the sculptor, is engaged at Paris on a statue of Bolivar the "Liberador," which is to cost 3,200l. The model is about to be sent out to Guayaquil for the approval of the Ecuador Government.

THE Cercle Artistique et Littéraire of Brussels will open an exhibition of the works of its members in November. A large new gallery has lately been added to the "grande salle" of the Cercle, which will then be inaugurated. The Cercle Artistique et Littéraire is about the most flourishing of all the art societies of Brussels.

A NATIONAL Kaulbach Institution has been founded at Nürnberg to give assistance to talented German artists, without distinction of age, sex, or place of residence. The council is composed of artists and lovers of art (*Kunstfreunde*), and the committee have already received powerful support, especially from Germans residing in foreign countries. The annual contribution to the foundation is fixed at two Reichsmark.

AN interesting account of the young Spanish painter Fortuny will be found in the *Zeitschrift für Bildende Kunst* of August 21. Théophile Gautier gave a short sketch of Fortuny's artistic life in the *Journal Officiel* some few years ago, and the present writer on the subject adds a few particulars gleaned from Fortuny's friends in Rome. The value of the article is increased by a capital woodcut from a pen-and-ink drawing by Fortuny—a most life-like sketch of a man seated on a rude bench and leaning on a stick. The other articles of the number are a continuation of Dr. Woltmann's "Excursions in Alsace," giving the history of the Minster at Strassburg, a review of Rudolf Rahn's *History of Art in Switzerland*, and a further account of Goethe's relations with the Saxon Art-Union, contributed by Hermann Uhde. Several long letters from Goethe are given, but they have not much interest.

An etching, by E. Forberg, of a picture in the Royal Academy at Vienna, attributed to Bonifazio, forms the frontispiece of the number.

THE great wooden gallery that runs along the *façade* of the Luxembourg, below the Pavillon de l'Horloge, is being heightened and enlarged. It has hitherto contained only the portraits of the members of the Institute, but its enlargement will now permit of the exhibition of a great many pictures that have been stowed away for want of room.

THE inauguration of the monument at the Ecole des Beaux-Arts to Henri Regnault and his comrades who fell in the late war, will take place on October 5.

AN important painting, by Rubens, of *The Judgment of Solomon*, will, it is announced, be put up to auction at the Hôtel Drouot during the forthcoming season. That this picture should be "still in a good state of preservation" is remarkable, considering the sufferings it has undergone, and the hair-breadth escapes it has had. In 1832, during the siege of Antwerp, *The Judgment of Solomon* (then in the Antwerp Museum) was struck by a projectile, and so badly wounded that a picture restorer demanded 1,500 fr. for his attention

to the case. After he had performed a cure, the restored Solomon was bought by M. Hercule Robert, a distinguished amateur, who possessed a fine gallery in Paris. But unfortunately, M. Robert's hôtel, which was situated at the angle of the Quai Saint-Paul and the Rue de l'Etoile, suffered greatly during the days of June, 1848. No fewer than eleven cannon balls were thrown into it; and one of them struck Rubens' painting exactly in the same place as the projectile at Antwerp. This second wound, however, was also skilfully healed, and Solomon is now reported to look as young and fresh as ever. The painter has depicted himself and his beautiful young wife, Helena Fourment, in this work.

OF late years attention has been drawn among Germans and Russians to the specialties which distinguish the industrial art-products of many tribes of Eastern Europe, more especially the South-Slaves who inhabit the shores of the Lower Danube. Here it would appear that the woollen and linen fabrics of their rude looms, and their embroidered cloths, which have been made after the same patterns for ages, possess a genuine artistic character in their designs and combinations of colour approximating very closely to primitive Oriental art. After long ages of neglect and contempt, the Germans are beginning in the present day to see the benefit that their own textile art may derive from copying the characteristic excellences of the relics of a primitive industry which the advance of Western civilisation is rapidly blotting out. Herr Essenwein and F. Bock have the merit of having been the first to recognise and draw attention to the scientific and artistic value of the brightly-coloured carpets, rugs, and borders, and the excellent embroideries on linen which were produced among the semi-barbarous Slavonic tribes who so long seemed to form the boundary line between Eastern and Western civilisation. The Technological Museum of Vienna now possesses some good specimens of these products, but the best collection of the kind is that of Herr Felix Ley, at Esseg, which was shown at the Paris Exhibition of 1867, and there attracted the attention of Professor Friedrich Fischbach, of Hanau, who, detecting the advantages which such models would afford to manufacturers, both in regard to designs for ornamental metallic working and for textile fabrics, procured the consent of the owner to have coloured plates taken of the most characteristic of these objects. The result of his efforts is an interesting work, entitled *Südslavische Ornamente* (Hanau, 1874), which is illustrated by seventeen admirable plates, and as a pendant to this, Professor Fischbach is preparing a work on the national art industry of Hungary. The St. Petersburg press has also recently issued a volume, which, under the title *L'Ornement Russe National*, treats of Slavonic embroidery and lace work, and thus, like the other books to which we have referred, supplies a want in industrial art literature.

IN Hubert Janitschek's article on German Art and German Artists in Rome, in *Unsere Zeit* for August 15, the author goes out of his way to speak of a young Norwegian sculptor, Daae Magelsen, who is, it appears, on the high road to a reputation of the same kind as Thorwaldsen's. He lived here in England in great destitution, cutting out models of ships for a livelihood, but his genius became slowly appreciated by his countrymen, and he was enabled to go to Rome to study. Janitschek praises a *Meleager* as particularly passionate in feeling and noble in outline, and mentions an excellent portrait of Ole Bull, the violinist.

THE collections of signet rings, seals, weapons, and armoury which had been made by the late Dr. B. J. Römer in the neighbourhood of Frankfurt am Main, has passed into the possession of Count Solms-Rödelheim. The acquisition by the Count of these interesting antiquarian objects has been hailed with much satisfaction in the neighbourhood, since it was feared that in default of a

purchaser nearer home this unique collection would make its way, like so many other art treasures, to England. The value and interest attaching to the collection are enhanced by the fact of its having given origin to the learned work on the "Seals of the emperors, kings, and self-styled kings of Germany," brought out by Dr. Römer in 1851.

A REMARKABLE find has been made in Nideggen Castle, the hereditary seat of the dukes of Jülich, where Archbishop Engelbert of Cologne was kept prisoner for some time, but which is at present only a ruin. The present proprietors have given instructions to have the well in the castle-yard cleared out. This well, according to old chronicles, is supposed to have a depth of 550 feet, and is said to extend to the bed of the river Roer. After clearing out large masses of *débris*, the workmen came, ninety-five feet under the present level, upon a large number of Jülich gold and silver coins, which were probably thrown into the well at the time of the storming of the castle by the Emperor Charles V. But the most interesting find was made a short time after, when a well-preserved cross-bow was brought up, inlaid with ivory and decorated with gold. At the butt end is a beautiful Gothic W inlaid in gold, with a crown and the number II above it, which leads to the supposition that the cross-bow, a most singular specimen of its kind, belonged to William II., Duke of Jülich. Helmets, heavy clubs with spikes, and several long knights' swords, partly attacked by rust, were also brought up. The several objects found will, as soon as the other excavations which have been ordered in other parts of the ruins are completed, be forwarded to Aix-la-Chapelle; the cross-bow, however, will be sent to Berlin, Duke William being an ancestor of the German Emperor.

THE STAGE.

"AMY ROBSART" AT DRURY LANE THEATRE.

IT is pleasant to see a large theatre filled from footlights to chandelier with enthusiastic students of English history, as presented in Mr. Andrew Halliday's cheap illustrated edition. It is agreeable to notice the approval with which they view both the heroic and unheroic deeds of past times; and the cheers which they bestow on queens and merry-andrews, on ministers of State and drunken senators, on screaming maidens and sleek villains. This impartial attitude is invaluable to the proper study of history. Mr. Halliday knows it, and makes use of it. His procedure is extremely simple. Sir Walter Scott had an inexhaustible talent for scenic effect, and employed that talent in writing historical romances. Mr. Halliday sets to work on Scott's pictorial ideas. Mr. Beverly provides them with illustrations; Mr. Halliday with letter-press. Mr. Beverly gives them a local habitation; Mr. Halliday a name. And the dramatist brings to his task a thorough knowledge of the modern science of the boards. It is a science which Byron disdained, and which Shakespeare lived too soon to understand. It causes managers to look askance on Manfred, and banishes Hamlet to the limbo of English operas at the Crystal Palace. But Mr. Halliday has studied it profoundly. He is marvellously versed in exits and entrances, in well-timed curses and looks of scorn, in brawls which shall drown the noise of workmen's hammers, in arrivals on state-barges and departures through trap-doors. This skill is conspicuously shown in *Amy Robsart*, lately revived at Drury Lane Theatre, in which, with the aid of a large number of officials, including the gasman and the prompter, whose names are all very properly placed in the bills, he has given a most creditable representation of England in the days of Elizabeth.

There is no period so well adapted to theatrical reproduction. It is the most highly coloured epoch of English history. In the transition from feudal to court life men's brains overflowed with

living forms. They found vent in the stage, in shows and pageants, masques and mythological entertainments, processions and dramatic receptions. All was extravagance. The men wore busks and verdingales: the women wore cambric ruffs and jewelled stomachers. In their speech they ran into far-fetched conceits, and played fantastically with words. The age would do nothing like other ages. Art had lately produced Titian and Correggio: the drama now gave birth to Shakespeare. Three hundred years pass, and the ideal changes. Art produces a Beverly and the drama a Halliday. The playgoer is to be humanised. He shall not again see Tamerlane riding in a chariot drawn by chained kings, Giovanni entering the banqueting-hall with his mistress's heart on his dagger, the Duchess of Malfi going slowly mad in the sight of the people. Daintier sights shall be set before him: queens gracefully descending from well-trained horses, gracefully stepping upon well-lined cloaks, gracefully departing in well-oiled barges. His passions are to be greatly stirred. The queen will now and again condescend to drag unhappy maidens about the stage, will throw them on the ground, will reproach them in vehement language. There shall be no stabbings and drownings and the like horrors; but merely a drawbridge, a bolt, and a moat underneath. And if with all this the spectator's aesthetic sense is not gratified, he must be a very ill-conditioned playgoer indeed.

Miss Wallis is remarkably intense as the heroine, Amy Robsart. She flashes defiance at Varney with all her features. She thinks to overwhelm him with clamour. She screams when he approaches her, screams when he leaves her, screams when he drags her up the steps of Mervyn Tower, screams when he falls through the drawbridge. But Mr. Creswick, as Richard Varney, stands undaunted in the midst of the confusion. He is the smoothest villain in all the annals of villany. The cries and menaces of Amy Robsart glide off him easily and naturally. Mr. Creswick is somewhat given to unmeaning action with his hands, but he is an excellent artist. It is to be regretted that actors are employed at all in plays of this class. Machinery is making such strides that the day cannot be distant when Miss Wallis's screams will be performed by a steam whistle and Mr. Creswick's gestures by a self-working pump-handle. Meanwhile it is necessary to say that the actors who are at present engaged gave much satisfaction, and if it be seemly to distinguish between them we may select for special praise the yeomen of the guard who wore their coursing-caps with great dignity, and the queen's white horse who carried his royal mistress so gallantly that he was received with unusual applause.

"THE BROKEN BRANCH" AT THE OPERA COMIQUE THEATRE.

Light opera has become an integral part of the modern stage. It is not, indeed, congenial to minds of severe calibre. Even the grand opera was long ago written down among the unveracities by Mr. Carlyle. But the classes whom it attracts to the theatre are very numerous, and include a large number of educated men. When the company from the Fantaisies Parisiennes of Brussels were singing the music of M. Lecocq's latest production it was by no means rare to see distinguished politicians, men of letters, and men of science unbending themselves in the stalls. The taste is not depraved, and the relaxation afforded to the mind by light music is infinitely more agreeable than that afforded by the sight of ships sinking into dusty waves, and by the splitting of wooden icebergs. But Mr. R. D'Oyly Carte is not concerned with the ethics of opera-bouffe: he merely regards it from a financial aspect, and finds the prospect pleasing. He has therefore established a permanent home for it at the above-named theatre, and has selected for his first venture a piece which met with success in Paris a little time ago. It has been adapted into ex-

cellent prose and verse by Mr. Du Terreaux, and the music is written by M. Gaston Serpette, a prizeman of the Paris Conservatory. It is constructed on the usual model of these productions, with a lover's part for M^{me}. Peschard and a hoyden's part for M^{me}. Judic. It would be difficult to count the number of mimic husbands who have been sent to fight the Saracens, of magic distaffs which have been broken, of silver cups which have been lost, through the sympathy existing between M^{me}. Peschard and M^{me}. Judic. But the Parisian public loves to see these actresses bill and coo, and Parisian authors and musicians generally love what the public loves. M. Serpette's opera is quite the best of these pieces written to order. Its story is sufficiently clear and more than sufficiently extravagant. It possesses no humour except a little of the pantomimic or slap-on-the-back order. But the music is very graceful, M^{lle}. Rita's singing the best thing of its kind ever heard in London, and the decorations and costumes unusually brilliant.

The story is compiled from various sources, and owes not a little to Scarron. It was a maxim of Roman law that a woman was the beginning and end of her own family. It was also a maxim of the House of Buhtvarnisch. In both cases the females were the broken twigs of the family tree. In both cases the maxim was grounded on tradition, but in the former it was a useful fiction, in the latter a disagreeable reality. Hereditary instinct was strong in the niece of the Grand Duke, and led her to run away from a convent and from her betrothed husband, Prince Isidor, and to join a company of strolling actors, in the ranks of which the prince had also enlisted to escape from his affianced bride. Of course two rustic lovers, the Peschard and Judic of the story, are found to replace them. Of course their names are Jean and Margotte: and of course Margotte is saluted as princess. But she did not proceed to retrieve the honour of the family: and she was not warned by the pictures which hung on the palace walls, of faded damsels who had broken as much of the family tree as their personal appearance would allow them. On the contrary, she demoralised the court. Though a simple village maiden, she had learned to dance the cancan as wildly as a dishevelled milliner of the Quartier-Latin. It is true that her country was Germany and the age mediæval: but the cancan is of no country and of no age. So the ministers of state and maids of honour, the gentlemen ushers and kitchen wenches, the master of ceremonies and prima-donna of the court, were initiated into the mysteries of a Parisian orgie, and held their own gallantly. The ladies abandoned their flowing robes and appeared in thinnest gauze. And it is perhaps due to the intervention of the new licenser of plays that the piece is brought to a speedy termination by the return of the true prince and princess.

It will be seen that there is little fun in the story, and yet the opera is thoroughly successful. For this the music of M. Serpette is entitled to much credit. It is the music of a young composer who has studied in a good school, but who has not allowed his fancy to run away with him. It cannot be very popular. The humour of Offenbach, and the grotesqueness of Hervé, are wanting to it; but it is distinguished by delicacy of feeling and daintiness of thought. M^{lle}. Pauline Rita and Miss Laverne pour out their sorrows in a duet, which is at one quaint and original. And this brings us to the remark that no branch of the drama has of late received so valuable an addition as light opera has received in M^{lle}. Pauline Rita. Her voice is sweet and her method perfect. She has evidently been trained for a higher stage. She has stooped to conquer. The refinement of her style is set in relief by the boisterous manner of Miss Laverne, who sings nautical ballads and dances Parisian quadrilles with the utmost vivacity. Altogether Mr. Carte may be congratulated on the success of his entertainment.

WALTER MACLEANE.

M^{me}. ANGOT and her daughter have once more returned to enliven the town. The fops with their black cravats and *cadettes relevées*; the ladies with their buffonts and shovel bonnets; Barras the statesman and Lange the actress; Ange Pitou the agitator and Larivaudière the stock-jobber; all the world of intriguers and gossips, of rascals and dissolute women, that was centred in Paris under the Directory, is once more represented on the London stage. At present it finds place at the Lyceum and Standard Theatres. At the former it is ably directed by Miss Emily Soldene; at the latter by Miss Julia Matthews. There is no reason why these companies should not join forces, and establish a theatre for the performance of the opera for ever.

MR. ARTHUR CECIL made his appearance on Wednesday at the Gaiety Theatre in Mr. Arthur Sullivan's operetta *Cox and Box*. Mr. Cecil is at his best in music of a humorous vein. He sings lullaby to the bacon with deep feeling, and relates with genuine emotion his flight from the renowned mistress of bathing-machines. But it is to be hoped that he will soon have an opportunity of showing the full range of his comic powers. Meanwhile the Gaiety programme is flanked by the *Princess of Trebizond*.

SEVERAL new pieces are expected in London. Drury Lane Theatre will in three weeks produce Mr. Halliday's play, *Richard Cœur de Lion*, in which Mr. Creswick and Miss Wallis perform the chief parts. At the Haymarket Theatre M^{lle}. Beatrice appears to-night in M^{lle}. Desclée's great part in *Frou Frou*; and she will revive on Saturday, September 19, the English version of Sardou's *Nos Intimes*. The Olympic Theatre will shortly produce an adaptation of M^{me}. D'Ennery and Cormon's latest drama *Les Deux Orphelines*. The Gaiety Theatre has in rehearsal a version of M. Lecocq's *Les Cent Vierges* and a comic opera by Johann Strauss. The Princess's Theatre will revive on Thursday next Mr. Watts Phillips' drama *Lost in London*. The Strand Theatre is preparing another farcical piece by Mr. Farnie, to be called *Loo*. The Alhambra Theatre produces on Monday next an opera-bouffe translated by Mr. Byron from a libretto written by M^{me}. Vanloo and Leterrier, and fitted with music by M. Georges Jacobi, the conductor of the theatre. And, finally, the Charing Cross Theatre opens on Saturday, September 19, under the management of Mr. W. R. Field, for the performances of Miss Lydia Thompson. A comedy by Mr. Burnand, said to be an adaptation of *Gavaut, Minard et Cie*, and an extravaganza by Mr. Farnie, said to be called *Blue Beard*, will be then produced.

SARDOU's play, *Les Gamaches*, was revived at the Théâtre du Vaudeville, Paris, on Tuesday. The Bouffes Parisiens opened on Wednesday with *La Jolie Parfumeuse*, M^{me}. Judic appearing in the part of M^{me}. Théo. Two new pieces have been performed in Paris: one at the Théâtre du Château d'Eau, by M^{me}. Clairville and Marot, called *Le Treizième Coup de Minuit*; the other at the Théâtre des Variétés, called *Les Mormons à Paris*, by M^{me}. Delacour and Louis Leroy.

GEORGE SAND has written a comedy called *L'Homme de Neige*. Victor Sejour's *Cromwell* is in rehearsal at the Théâtre de l'Ambigu. The piece by M^{me}. Lecocq and Sardou, called *Les Prés-Saint-Gervais*, has been read to the artists of the Théâtre des Variétés, and the principal parts assigned to M. Dupuis, M^{me}. Z. Bouffar, and M^{me}. Paola Marié. The autumn and winter seasons at Paris will see many other novelties, of which we will shortly give a list.

THE members of the Academic Theatrical Society of Berlin have unanimously resolved to assume for the association the name of "Akademisch-literarischer Verein." Prince George is still its patron, and in an autograph letter to the president has signified his approval of the change of name, because the new title is more in keeping with the objects and tendencies of the society.

ACCORDING to a Prague journal, the tragedian Rossi is applying himself closely to the acquisition of the German language. He has already made such progress that he will probably make a professional tour through the whole of Germany next year, in order to interpret Shakespeare, Schiller, and Goethe to the Germans in their own language.

MR. BOUCICAULT has prepared a piece for Booth's Theatre at New York, founded upon incidents in the late American rebellion, and has gone over to superintend its bringing out.

MUSIC.

THE Gloucester Musical Festival, some particulars concerning which were given in the ACADEMY of August 15, commences on Tuesday next, and will be continued daily till Friday.

M. OFFENBACH is engaged to write a grand opera bouffe in three acts especially for this country, which is to be produced at Christmas in one of our chief London theatres. The subject is to be "Whittington and his Cat," and the libretto will be from the pen of Mr. H. B. Farnie.

MDME. ILMA DE MURSKA has commenced an operatic engagement at Pesh as Lucia, with great success, being recalled a dozen times in the course of her performance.

MDME. DÉSIRÉE ARTÔT, and her husband Signor Padilla, are about during the coming season to make a professional tour through Russian Poland, Denmark, Sweden, and Norway.

THE young and talented Dutch musician, Herr J. Kwast, has been appointed to the professorship in the Cologne Conservatorium rendered vacant by the resignation of Herr Gernsheim.

HERR EDUARD MANTJUS, once one of the chief ornaments of the Berlin Opera, died at Ilmenau on July 4, at the age of sixty-eight. Herr Mantjus retired from the stage in 1857.

Ueber Land und Meer states that Mdme. Adelina Patti (the Marquise de Caux) will not star in Paris in the coming winter. She is again engaged for the Italian Opera in St. Petersburg and Moscow, where she will enjoy considerably higher salaries than ever before.

IN Christiania the foundation has been laid of a monument to the Norwegian composer, Halldan Kjerulf. The bust, which has been cast by the sculptor Bissen in Copenhagen, will be unveiled on September 15.

THE little pavilion in the garden of the Freihaus, in one of the parts of Vienna called Wieden, which belonged to the Prince Harbenberg, was always one of the first places which the music-loving visitor to the great Austrian metropolis inspected. It is known as a fact that in this little wooden house, which has of late years been in a state of decay, Mozart wrote his masterwork *Die Zauberflöte*. Last spring Prince Harbenberg presented the "magic" pavilion to the "Mozarteum" in Salzburg (for the benefit of which Adelina Patti lately gave a concert), in order that this sacred relic may be preserved. The pavilion has now been transferred to Salzburg, where the aldermen found a place for it in the Mirabellen-Garden. This place was enclosed by a gilt gate, and called "Mozarteum." But afterwards it was found that the memorable little house was too little "monumental" in itself for its situation, and that it was in a too far advanced state of decay to be left in the open air without protection. So at one of the last meetings, Dr. Oscar Berggrün, one of the members of the committee, who has been already mentioned in this paper, proposed to build a little house wherein the pavilion is to be preserved. In consideration of the subject of the great work whose cradle the little pavilion was, he proposed that the house should be rebuilt as an Egyptian temple, and the pavilion should take

therein the place of an "altar"—a sacred altar indeed for every musician and lover of music. This proposal was unanimously accepted, and the temple is now being built, after the sketches which Dr. Berggrün brought himself from Egypt, where he spent nearly all last winter and spring. Several Salzburg amateurs have subscribed for the expenses of building, in order that the Mozart Fund may be spared. In the *Zauberflöte* pavilion itself, on the very table on which this marvellous opera was written, there will be a large album, and all the great musicians, poets, and critics of all nations will be invited to send their photograph, with a few lines, to this album. Among those which have already arrived, there is one remarkable, that by Herr Emanuel Geibel, one of the most prominent lyric poets of our century. It runs thus:—

"Mag die Welt vom einfach Schönen
Sich für kurze Zeit entvöhnen,
Nimmer trägt Sie's auf die Dauer
Schnöder Unnatur zu fröhnen,
Zu dem Gipfel treibt sich heimwärts
Den die echten Lorbeern Krönen
Und mit Wonne lauscht sie wieder
Gothe's Liedern, Mozart's Tönen."

Several prominent English musicians have already been asked to send their portraits and autographs.

VERDI's new opera *Julius Caesar* will be produced during this season in Paris and several towns in Italy.

MR. DEXTER SMITH publishes in the *American Review* a letter which he says he has received from Richard Wagner, and in which the writer complains that the Bayreuth enterprise has not only met with much opposition among the German public, but also that the whole German press has been aroused against it. The letter is written in that arrogant style which made the great composer "one of the best hated men of his period." The *Neue Freie Presse*, reprinting that letter, remarks:—

"This letter contains so many invectives against Germany, its musicians, and those who came willing to make every sacrifice after the first appeal from Bayreuth, that we should be glad to hear that it comes only from the pen of a sensational American reporter. It will be Richard Wagner's duty to disavow, if he can, this letter, which might prove injurious to himself and his enterprise."

GUSTAVE HOLZEL's new song, "Geduld der Knospe," which he has written for Adelina Patti, has been bought by Schott und Sohne for 500 gulden (45*l.*), and will be published with English and German words.

THE Vienna "Männergesang-Verein" gave a great concert, on the 25th ult., at the Teatro Fenice, and excited the greatest enthusiasm. Schubert's "Gondoliers," Weinwurm's Italienisches Volkslied, and Abt's "Vineta," were encored. Great ovations were offered to the conductors, Herren Kremser and Weinwurm, and the president, Dr. Olschbauer. In the evening the society was invited by the "Società Allemanna," and on the 25th, a great Liedertafel was given on the Laguna.

THE opening of the New Opera at Paris is fixed for January 1; but the number of workmen employed is insufficient for the work, and it is to be hoped the Government will use every exertion for its completion. M. Halanzier will be ready before the appointed time; the decorations and costumes are executed on a large scale, and *Hamlet*, *La Juive*, and *Faust*, will be ready for the rehearsals in October. The orchestra, the choruses, and the ballet will then be completed. Mdme. Nilsson visited the opera a week or two ago to try the acoustic merits of the new building, and the result was most satisfactory, though, with the scaffolding, and the absence of flooring, it was impossible to judge how far the voice would travel. Mdme. Krauss is also expected this week to make a similar trial.

POSTSCRIPT.

DR. EMIL BESSELS has addressed a letter to the *Allgemeine Zeitung* from the Smithsonian Institute at Washington, in which he explains at length the reasons which led to the return of the *Polaris* expedition before the appointed time, and when it had only reached 83° N. lat. He asserts that the death of Captain Hall in no way influenced the survivors in their decision to return without having accomplished the main object of the expedition, but that, on the contrary, the result must have been precisely the same had he lived, since the *Polaris* had sprung a leak twelve feet below the water line, which it was found impossible to stop, while her position was rendered most dangerous by the continual pressure against her side of the great iceberg which lay between her and the shore. When towards the end of the winter the N.E. storms began to set the ice in motion, the *Polaris* was driven helplessly out towards the sea, at the very time that it was necessary to work the pumps almost incessantly. As this could only be effectually done by the aid of steam, the coal-supplies rapidly diminished, and under these circumstances the officers in command of the ship, after the death of Captain Hall, had no alternative but to return; to have persevered would simply have been to incur certain destruction. In regard to the opinion expressed by some American papers that the officers of the *Polaris* should have tried to advance northward in sledges, Dr. Bessels states that the sea-ice was in constant motion, owing to the mildness of the season, and was so rough and uneven that there was not more than a couple of square miles of smooth ice over the entire area of Robeson's Channel. Violent storms prevailed, moreover, all the winter in the ratio of 75 per cent. of the entire period, and carried the snow off the land in sudden squalls, heaping it up at some spots in huge drifts, and leaving the ground denuded at other places and unfit for sledges. Dr. Bessels draws attention to the numerous incidental and uncontrollable causes on which the success of Arctic expeditions must always depend, and he points out how little the courage and endurance of the bravest and most determined explorers can influence the result of such enterprises.

TABLE OF CONTENTS.

| | PAGE |
|--|------|
| VON REUMONT'S LORENZO DE' MEDICI, by the Rev. M. CREIGHTON | 253 |
| BUSK'S VALLEYS OF THE TIROL, and VON GÜNTHER'S TALES AND LEGENDS OF THE TIROL, by W. R. S. RALSTON | 254 |
| THE POEMS OF WILLIAM BLAKE, by W. M. ROSETTI | 255 |
| SMYTHE'S TEN MONTHS IN THE FLIT ISLANDS, by A. M. E. SMITH | 256 |
| BIGOT'S LE BOURGADIEIRO, by E. MARZIALS | 257 |
| LEGAY'S HISTORY OF LOUIS XI., by H. WALLON | 258 |
| FOSTER'S PEDIGREES OF THE COUNTY FAMILIES OF YORKSHIRE, by J. J. CARTWRIGHT | 258 |
| TWINING'S TECHNICAL TRAINING, by J. S. COTTON | 259 |
| SOLLY'S GERALD AND HIS FRIEND THE DOCTOR, by A. LANG | 260 |
| CURRENT LITERATURE | 260 |
| NOTES AND NEWS | 261 |
| NOTES OF TRAVEL | 263 |
| THE ALPINE JOURNAL AND ALPINE CLUB MAP OF SWITZERLAND | 264 |
| A LONDON ALDERMAN'S JOURNAL, 1796-7 (concluded) | 265 |
| SELECTED BOOKS | 266 |
| CORRESPONDENCE:— | |
| The Phenicians in Brazil, by Dr. Julius Euting; Posthumus in Cymbeline, by F. J. FURNIVALL | 266 |
| THE MEETING OF THE BRITISH ASSOCIATION AT BELFAST, | 267 |
| MR. FOLLY, by W. M. ROSETTI | 276 |
| CAMBIAN ARCHAEOLOGICAL SOCIETY | 277 |
| SPURIOUS HEBREW COINS | 277 |
| NOTES AND NEWS | 277 |
| "AMY ROSSART" AT DRURY LANE, AND "THE BROKEN BRANCH" AT THE OPERA COMIQUE, by WALTER MACLEANE | 278 |
| STAGE NOTES | 279 |
| MUSIC, POSTSCRIPT, and TABLE OF CONTENTS | 280 |